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# PROCEEDINGS

OF THE

## AMERICAN SOCIETY

OF

## CIVIL ENGINEERS

VOL. XLV—No. 5

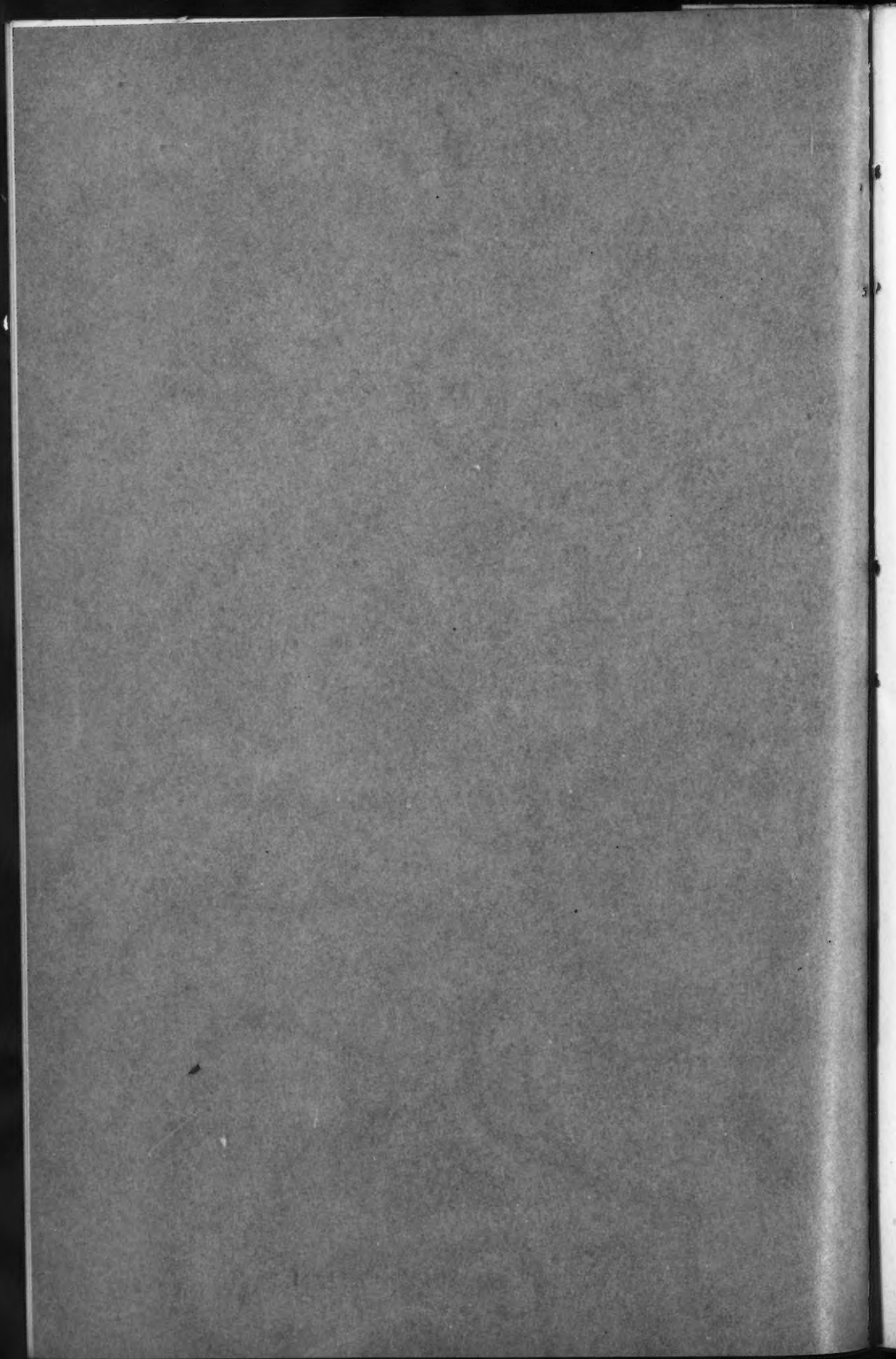


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# AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852.

## PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

### SOCIETY AFFAIRS

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### MINUTES OF MEETINGS

#### OF THE SOCIETY

**April 16th, 1919.**—The meeting was called to order at 8.30 P. M.; Vice-President Nelson P. Lewis in the chair; Stephen L. Coles, Assistant Secretary, acting as Secretary; and present, also, 136 members and guests.

The evening was devoted to a discussion of American Highways. W. G. B. Thompson, Assoc. M. Am. Soc. C. E., State Highway Engineer of New Jersey, addressed the meeting on "Development of New Jersey's Highway System and Its Relation to Hudson River Vehicular Tunnels and Ferries." H. Eltinge Breed, M. Am. Soc. C. E., First Deputy Commissioner of Highways, State of New York, then spoke on "The

Engineering Alliance—Some Future Developments in Engineering as Seen from a Highway Standpoint.” A series of moving picture films illustrating several new devices for highway construction were shown by Mr. R. E. Brooks.

The subject was discussed by Messrs. E. W. Stern, W. G. B. Thompson, E. T. Thurston, H. E. Breed, Calvin Tomkins, N. P. Lewis, T. K. Boorman, and Clifford Richardson.

The Assistant Secretary announced the election of the following candidates on April 14th, 1919:

#### AS MEMBERS

PERCIVAL CLOW, New York City  
WALTER MANDEVILLE DAWLEY, New York City  
EDWARD WARREN DELANO, Baltimore, Md.  
MARTIN RYERSON EVERETT, Newark, N. J.  
JOHN JAMES HARMAN, Kewanee, Ill.  
JAMES PINNEY LEAF, Rochester, Pa.  
FRED BAILEY OREN, Mattoon, Ill.  
ARTHUR IRVING PERRY, Brooklyn, N. Y.  
CHARLES RICHARD SUMNER, Los Angeles, Cal.  
EDWARD LAWRENCE WAGNER, New York City  
WILLIAM HENRY WETZLER, New York City  
JAMES CREW WONDERS, Omaha, Nebr.

#### AS ASSOCIATE MEMBERS.

RUDOLF WILLIAM BEUTTENMULLER, Philadelphia, Pa.  
EUGENE BAKER BROWN, San Luis Obispo, Cal.  
JESSE FRED BROWN, Washington, D. C.  
WOLSTAN ELLIOT BROWNE, Philadelphia, Pa.  
ERNEST ARDEN BRUCE, Charleston, W. Va.  
VERNI JAY CHAPMAN, Kansas City, Mo.  
HALE AUSTIN CLARK, Baltimore, Md.  
PERLEY EUGENE CONNER, Winnetka, Ill.  
WALTER DUNLAP CRAIG, Baltimore, Md.  
NORMAN DOUGLAS DEAN, Am. Exp. Forces  
ALLAN VAUGHN ELSTON, Tulsa, Okla.  
ALFRED PHILIP FISHER, San Francisco, Cal.  
LEROY ERNEST GARDNER, Brooklyn, N. Y.  
HARRY LUCAS HAVENS, Kansas City, Mo.  
RALPH EMERSON HERMAN, JR., Fort Myer, Va.  
OSCAR HENRY KOCH, Dallas, Tex.  
JOHN FRANCIS LABOON, Pittsburgh, Pa.  
JOHN LATENSER, JR., Wilmington, N. C.  
REX BARNUM LOCKWOOD, Manila, Philippine Islands  
FRANK ANGUS McNALLY, Chicago, Ill.



ARTHUR GARLAND MOULTON, New York City  
THOMAS FLINT NICHOLS, Phoenix, Ariz.  
WALTER CHRISTIAN PAULI, Chicago, Ill.  
FRED PEISER, New York City  
JOHN GANSOVERTTE ROSE, Denver, Colo.  
EDWIN LYLE SCRUGGS, Charlotte, N. C.  
FRANK THOMAS SHEETS, Springfield, Ill.  
CHRISTIAN LUDEWIG SIEBERT, Camp Dix, N. J.  
BENJAMIN JOSEPH SIGMUND, Philadelphia, Pa.  
GEORGE PHILIP ALEXANDER STAPE, Dayton, Ohio  
ALBERT LESTER STEVENSON, Philadelphia, Pa.  
JAMES HARGRAVES TEBBETS, South Bethlehem, Pa.  
HOWARD WILLIAM WEBB, Newark, N. J.  
CARL LESLIE WEIL, New York City  
FREDERICK CLIFFORD WHITNEY, New Orleans, La.  
JAMES THEODORE WHITNEY, Camp A. A. Humphreys, Va.  
HARRY ANTHONY WIERSEMA, Portsmouth, Va.  
CHESTER OWEN WISLER, Albany, N. Y.  
PAUL HENRY WOODWORTH, Philadelphia, Pa.  
JUDSON ZIMMER, Gloversville, N. Y.

## AS JUNIORS

WARNER COTTON BROCKWAY, Camp Meade, Md.  
MARTIN WARREN COWLES, Camp Sheridan, Ala.  
SAMUEL JACK GLASER, New York City  
EDGAR YOUNG GRUPE, JR., Fort Omaha, Nebr.  
JOHN HENRY GUEST, Pine Bluff, Ark.  
GEORGE W. McCLELLAND, Penn's Grove, N. J.  
ELWOOD AITKEN O'DONNELL, Pelham, N. Y.  
SYDNEY ROGOW, New York City  
NATHANIEL LEONARD SHAFFER, Philadelphia, Pa.  
EDWARD FRANCIS WEISKOPF, Am. Exp. Forces  
JOHN WESLEY WHITE, Baltimore, Md.

The Assistant Secretary announced the transfer of the following candidates on April 14th, 1919:

## FROM ASSOCIATE MEMBER TO MEMBER

AUGUSTINE HAINES AYERS, Fort Shaw, Mont.  
ASTOLFO BARTOCINI, New York City  
ALBERT FREDERICK CHITTENDEN, Am. Exp. Forces  
WILBUR SHERMAN CORKRAN, Camp A. A. Humphreys, Va.  
GEORGE DANA EMERSON, Brookline, Mass.  
JOSEPH HAMILTON FLEMING, Columbus, Ohio.  
CHARLES GOODMAN, New York City

HORACE SINCLAIR HUNT, Detroit, Mich.  
 WILLIAM AMBROSE KINSEY, Newark, N. J.  
 JOHN LANSDALE, Aml. Exp. Forces  
 HALLETT EDWARD MCCLINTOCK, Omaha, Nebr.  
 ROBERT ROY MCGREGOR, Santa Barbara, Cal.  
 MANLEY PEROE NORTHAM, New Kensington, Pa.  
 LEO THOMAS PEDEN, Houston, Tex.  
 CHARLES FREDERICK PUFF, JR., Philadelphia, Pa.  
 WILLIAM LE ROY REYNOLDS, Nitro, W. Va.  
 ERNEST FRANKLYN ROBINSON, Camp A. A. Humphreys, Va.  
 JAMES HAMPDEN SMALL, JR., Richmond, Va.  
 JOHN WILLIAM SWAREN, Camp A. A. Humphreys, Va.  
 ROYAL SYLVESTER WEBSTER, Havana, Cuba

#### FROM JUNIOR TO ASSOCIATE MEMBER

HAROLD LAW BLAKESLEE, New Haven, Conn.  
 WILLIAM RICHARD COBB, Cape May, N. J.  
 JACOB LESLIE CRANE, JR., Harrisburg, Pa.  
 WILLIAM EDWARD FITZGERALD, New Brunswick, N. J.  
 JAMES KIDWELL GRANNIS, Dayton, Ohio  
 CHARLES ROYCE HAUKE, Chinook, Mont.  
 NATHAN BERND JACOBS, Pittsburgh, Pa.  
 EMORY WILSON LANE, Lafayette, Ind.  
 SAMUEL BROOKS MORRIS, Pasadena, Cal.  
 FRANCIS TINGLEY, Altoona, Pa.  
 FRANCIS MONTGOMERY VEATCH, Lawrence, Kans.

The Assistant Secretary announced the following deaths:

OWEN BRAINARD, of New York City, elected Member, October 3d, 1906; died April 2d, 1919.

LEWIS ABEL NICHOLS, of Chicago, Ill., elected Member, October 5th, 1892; died March 5th, 1919.

RUFUS MASON WHITTET, of Boston, Mass., elected Associate Member, May 2d, 1911; Member, November 4th, 1914; died December 10th, 1918.

CHARLES EDWIN BRIGHT, of Chattanooga, Tenn., elected Associate Member, December 3d, 1902; died April 3d, 1919.

PAUL ROBERT KIRSTEIN, of Cincinnati, Ohio, elected Associate Member, May 15th, 1917; died October 17th, 1918.

ANGUS ROBERT MACKAY, of Wickenburg, Ariz., elected Associate Member, October 29th, 1912; died June 30th, 1918.

WALTER SCOTT OBERMEYER, of Pittsburgh, Pa., elected Junior, April 7th, 1915; Associate Member, April 17th, 1917; date of death unknown.

Adjourned.

**May 7th, 1919.**—The meeting was called to order at 8.30 P. M.; Vice-President Nelson P. Lewis in the chair; T. J. McMinn, M. Am. Soc. C. E., acting as Secretary; and present, also, 90 members and guests.

The minutes of the meetings of March 19th and April 2d, 1919, were approved as printed in *Proceedings* for April, 1919.

A paper by A. F. Parker, M. Am. Soc. C. E., entitled, "The East Canyon Creek Dam", was presented by Walter C. Parmley, M. Am. Soc. C. E., and illustrated with lantern slides.

A discussion by Edward Godfrey, M. Am. Soc. C. E., was presented by the Acting Secretary, and a brief reply thereto was made by Mr. Parmley.

The Acting Secretary announced the following deaths:

TIEN YOW JEME, of Hankow, China, elected Member, November 30th, 1909; died April 24th, 1919.

NORMAN BENJAMIN KELLOGG, of San Diego, Cal., elected Junior, February 6th, 1878; Member, July 3d, 1895; died November, 1918.

PAUL JONES BEAN, of Troy, N. Y., elected Junior, May 2d, 1911; Associate Member, December 31st, 1913; died January 25th, 1919.

THOMAS HATCHER MATSON, of El Paso, Tex., elected Associate Member, October 1st, 1913; date of death unknown.

Adjourned.

#### OF THE BOARD OF DIRECTION

(Abstract)

**April 14th, 1919.**—The Board met at 10 A. M.; President Curtis in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Beahan, Clark, Crocker, Davis, Elwell, Flinn, Fort, Grunsky, Herschel, A. M. Hunt, Ketchum, Langthorn, Lewis, Metcalf, Pegram, Rights, Talbot, Tuttle, Wagner, and Wall.

Mr. Rights, Chairman of the Publication Committee, presented a report, and a letter-ballot of the membership was ordered to determine whether the List of Members in the Year Book should be printed hereafter as a single alphabetical list.

It was also voted that if the membership decided on this form that the names of Honorary Members shall appear in a separate list as well as in the alphabetical list.

It was also ordered that this letter-ballot shall ask the wishes of the membership in regard to the publication in the monthly *Proceedings* of "Changes of Address."

It was voted that the letter-ballot be accompanied by an explanatory statement prepared by the Secretary, with the advice and consent of the Publication Committee.

The Board approved the action of the Executive Committee which instructed the Secretary to write to the Chairman of the Development Committee expressing the hope that a Progress Report of that Committee would be forthcoming in time to be printed and circulated to the membership before the Annual Convention, in order that it might be discussed intelligently, and to say, further, that it is necessary that such Report should be in the Secretary's hands at least thirty days prior to the Annual Convention in order that this may be properly done.

The election, by letter-ballot of the Board canvassed February 5th, 1919, of Stephen L. Coles as Assistant Secretary for one year ending with the Annual Meeting, 1920, and the retirement of Thomas J. McMinn, Assistant Secretary, was reported.

The appointment of A. S. Baldwin, M. Am. Soc. C. E., by the Executive Committee to represent the Society at a conference called by the National Service Committee of Engineering Council to be held at Chicago, April 23d-25th, 1919, to consider the establishment of a National Department of Public Works, was reported.

The Secretary also presented a Prospectus, forwarded by M. O. Leighton, Chairman of the National Service Committee, in which he states: "In the interest of efficiency of procedure at that meeting it is earnestly requested that your organization take action on the several matters presented therein, and forward to this office at the earliest possible date one of the copies of the prospectus, duly engrossed."

After discussion, the Board adopted the following:

"The Board of Direction of the American Society of Civil Engineers, approves the general principle that the engineering activities of the Federal Government should be co-ordinated and concentrated, so far as practicable, under a single responsible head, and further approves the action of the National Service Committee of Engineering Council, by its Chairman, in calling together representatives of the various engineering organizations of the country for the discussion and study of the subject and the formulation of a definite plan of action in the premises. The Board of Direction does not feel that it can give categorical answers to the queries submitted to it by the Chairman of the National Service Committee. It feels that it lacks that full and comprehensive knowledge of all the factors involved on which such answers should be based."

The Secretary reported that Messrs. J. R. Worcester and A. N. Talbot had accepted appointment as representatives of the Society on Engineering Council, and that H. J. Burt had accepted appointment as one of the representatives of the Society on American Engineering Standards Committee.

Adjourned at 12.55 P. M.

The Board reconvened at 2 P. M., and at once took up the matter of the proposed purchase of the building, 35-37 West 39th Street, brought to the attention of the Board by a letter, dated March 21st, 1919, from the Secretary of United Engineering Society, addressed to the governing bodies of the four Founder Societies, and transmitting copy of report by the Finance Committee of U. E. S. recommending that the office building, Nos. 35 and 37 West 39th Street, be purchased, and stating, further, "the project was approved by the Trustees at a meeting held March 20th, as indicated by the following resolutions, which were adopted unanimously:

*"Resolved,* That the report of the Finance Committee on the acquisition of additional real estate be and the same hereby is approved.

*"Resolved,* That the President and the Finance Committee be requested to continue negotiations for the property and to present a definite project with reference thereto; and

*"Resolved,* That the Finance Committee be requested to present a definite financial plan covering the matter;

*"Both* these matters to be referred to the Trustees for further action.

*"Resolved,* That while the legal counsel of United Engineering Society advise that under its Charter and By-Laws the responsibility for this purchase must rest with United Engineering Society, the Trustees, nevertheless, desire the Founder Societies to be fully informed regarding the proposed purchase, and therefore present the matter for their consideration and endorsement."

The whole matter was very carefully considered, and the following resolutions were adopted:

*"Resolved:* That it is the sense of the Board of Direction that the policy of aggregating the headquarters of Engineering Societies, other than the Founder Societies, in a common center is desirable.

*"Resolved:* That the Board of Direction of the Am. Soc. C. E. hereby directs its representatives in the Board of Trustees of the U. E. S. to oppose the proposed purchase of the office building, Nos. 35 and 37 West 39th Street, until after the project shall have been formally approved by the governing body of each of the Founder Societies.

*"Resolved:* That the Secretary be directed to send to U. E. S. and the Founder Societies and to the representatives of the Am. Soc. C. E. in the Board of Trustees of U. E. S., copies of this resolution."

Adjourned 5.30 P. M.

**April 15th, 1919.**—The Board reconvened at 9.40 A. M.; President Curtis in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Beahan, Clark, Crocker, Davis, Elwell, Fort, Grunsky, Herschel, A. M. Hunt, Ketchum, Langthorn, Lewis, Metcalf, Pegram, Rights, Talbot, Tuttle, Wagner, and Wall.



An invitation to appoint representatives on the Engineering Division of the National Research Council\* was presented, and the President was authorized to appoint such representatives. President Curtis subsequently appointed Messrs. George S. Webster, H. H. Porter, and A. Marston as such representatives.

Resolutions adopted by the Kansas City Engineering Society, Ohio Engineering Society, and Rochester Engineering Society, were presented, pledging allegiance and support to the four National Societies in the development of professional engineering and the necessary legislation to procure the best results, and appealing to the Societies to act in the premises, etc., and the whole matter was referred to the Development Committee.

A budget of estimated expenses for 1919 from the Development Committee was presented, and, after discussion, and report from the Chairman of the Finance Committee, \$5 000 was appropriated at this time for the use of that Committee.

The Secretary reported that the full-size model of the Alfred Noble Memorial in Rawlins Park, Washington, D. C., which was falling to pieces, had been removed.

The following resolution from Engineering Council was considered:

*"Voted:* That for the necessary support of the National Service Committee during 1919, Engineering Council ask from each Founder Society the sum of \$5 000 and from the American Society for Testing Materials, an amount in like proportion to its membership. Engineering Council asks this with full knowledge of the difficulties which the grantor societies will meet in complying, but does so with the conviction that such money will be absolutely needed if the National Service Committee is to carry out the valuable work which has been started—work designed to increase respect for, and power of, the whole Engineering Profession."

In connection with this a previous communication from Engineering Council stating that no additional contribution for this purpose would be requested during 1919 was presented; also resolutions† adopted at the January 27th, 1919, meeting of the St. Louis Association of Members, favoring the voluntary contribution of one dollar per member per year for a period of three years by all members of the Society for the National Service Committee.

The following was voted:

"The Board of Direction of the American Society of Civil Engineers is unable to comply with the request from Engineering Council for an appropriation of \$5 000 for the support of the National Service Committee.

"The Board of Direction of the American Society of Civil Engineers will favorably endorse action by Engineering Council if it makes

\* See p. 476.

† *Proceedings*, Am. Soc. C. E., March, 1919, p. 324.

an appeal for voluntary contributions from the engineering profession at large."

Director Beahan presented certain resolutions\* from the Cleveland Association in regard to the work of the Development Committee.

After much discussion the whole matter was laid on the table.

The Secretary was instructed to write to the Cleveland Association of Members as follows:

"The Board of Direction of the American Society of Civil Engineers acknowledges the receipt of the resolution of the Cleveland Local Association bearing upon the work of the Development Committee.

"The Board is greatly interested in the work of the Committee on Development and hopeful of helpful outcome from its deliberations and recommendations.

"The Board feels, however, that the action suggested by the Cleveland Association is not warranted, and for this reason tabled the resolution offered by Mr. Beahan."

It was also voted:

"That the Board of Direction expresses its great interest in the work of the Committee on Development, and trusts that it will be able to push its work through to a successful conclusion."

Past-President Talbot was requested to express to the Development Committee, through its Chairman, the sympathy of the Board with its work, the hope of the Board that that work would progress rapidly, the intention of the Board to support the Committee in its work as far as its finances will permit, and the desire of this Board that there be co-operation with similar Committees of the other societies.

The action† taken at the February 12th, 1919, meeting of the Southern California Association of Members of the Society, in regard to the importance of the work of the Development Committee, was reported, and the Secretary was instructed to advise the Southern California Association of the action which has already been taken.

The action‡ of the Duluth Association of Members of the Society recommending to Engineering Council the adoption of some plan of sending a frequent bulletin or news circular to each of the members of the four Founder Societies as a means of transmitting information, etc., was reported, and the Secretary was instructed to notify the Duluth Association that the Society will be glad to publish from time to time anything put forward of interest to the membership. Director Rights, Chairman of the Publication Committee, stated that he had attended the meeting of the Publicity Committee of Engineering Council, and that these points were brought up, and in general, that the Committee was against Engineering Council starting any form of bulletin of its

\* *Proceedings*, Am. Soc. C. E., March, 1919, p. 318.

† *Proceedings*, Am. Soc. C. E., March, 1919, p. 325.

‡ *Proceedings*, Am. Soc. C. E., February, 1919, p. 209.

own, but that the Society will be glad to publish anything about which Engineering Council wanted publicity.

The President was authorized to appoint a Committee on Prizes for this year.

The resignations of 2 Members, 6 Associate Members, 1 Associate and 3 Juniors, were accepted.

Ballots for membership were canvassed resulting in the election of 12 Members, 40 Associate Members, 11 Juniors, and the transfer of 11 Juniors to the grade of Associate Member.

Twenty Associate Members were transferred to the grade of Member.

Applications were considered and other routine business transacted. Adjourned.

The Board reconvened at 7 p. m. immediately on adjournment of the Membership Committee; President Curtis in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Clark, Crocker, Elwell, Grunsky, Langthorn, Lewis, Rights, Talbot, and Tuttle.

Messrs. L. D. Rights, Geo. H. Pëgram, and J. E. Greiner were appointed a conference committee to confer with the Committee on Iron and Steel Structures of the American Railway Engineering Association and to report back to the Board.

A report from the Membership Committee was received and acted upon.

Adjourned.

## ITEMS OF INTEREST

### A Plea for Broader Technical Education— Civic Responsibilities of the Engineer\*

BY MORTIMER E. COOLEY, M. AM. SOC. C. E.†

It is most unfortunate that in the future education of our youth Latin and Greek and the other so-called dead languages are to play so little part. It is particularly unfortunate at this time when the world is planning its recovery from the war and statesmen are seeking means to prevent recurrence of wars.

Even as a preparation for engineering I have for years considered that there was no better training than Latin and Greek. Most of the big engineers of to-day went to college when Latin and Greek were prime in the curricula. They were classical students—many of them. There was comparatively little of engineering science in those days and therefore plenty of time for something else than mere technical training.

Why, then, give our youth a smattering of this and that so-called practical thing as a preparation for college? How much better it is to give them something not only preparing them for college but starting them off in life so as to be of maximum use to themselves and their fellow-men. Most young men have only four years in college; they have forty years afterward in which to learn and practise the bread and butter part of their life. The one great need to-day from our educational institutions is training for responsible citizenship.

Starting back in the grade schools, I would eliminate all fads and stress those things which make for an understanding and appreciation of natural things surrounding us. Our boys and girls should be able to see things by the roadside to which they are now blind. The hills, the fields, the forests and the streams should not be a sealed book for them. I would not teach them too much from books in the schoolroom. They can read books for themselves when they have the incentive. The incentive can be given them in the schoolroom.

Fortunate indeed is the child who has a teacher who revels in the work of teaching, who watches the child's mind develop with the same delight that a sculptor or painter sees his creation grow. Unfortunately too many of our teachers in the lower grades teach because they must make a living. They teach for the dollars and not for the love of teaching.

\* Extracts from two articles by Dr. Cooley in the *New York Evening Sun*, April 14th and 15th, 1919.

† Dean of the Departments of Engineering and Architecture, University of Michigan.

Toward the end of the grades and before the high school period I would start in with Latin, giving to it the importance that it formerly had, but teach it not as a dead but a live language; and along with it take up history and the natural sciences; all in preparation for later study of these subjects. In case there is no later study—the boy and girl having to go to work—they would carry with them into life something they would otherwise never have known anything about.

In the high school I would still keep away from fads and hammer away on the fundamentals, stressing all those things which fit one to live one's life better and getting out of it enjoyment for oneself and those with whom one has to live. I would develop in them love of country rather than of self. This period could be made of vast use to the nation, and should be, as it is the finishing school of most young men and women. Such a training as I am thinking of would also be the very best training for college.

The college should follow along the same lines, stressing in the early years the things which make for general training, leaving the special things for a later period. Comparatively little specialization should, however, be done in the college. The work leading to the bachelor's degree should in the main be for general education. Following the college should come specialization in the field of one's life work.

This plan would add a year, perhaps two, but the delay would not really be any handicap. It certainly would not be so in engineering. One large employer of engineers complained that college engineers nowadays were unsatisfactory; that while they knew special engineering things extremely well, they did not know anything else; that what employers needed were young men of parts, those who could take part in activities not of a strictly technical character; that more than all else the world to-day needed engineers of imagination and vision to see beyond the walls built up around them in college.

For the young American going into engineering I would advise a thorough preparation in fundamentals, eschewing all fads, even manual training and the practical things thought so essential to his success, and including not less than two years of Latin, preferably three or four years. Considerable history, some political economy. A good knowledge of English and of literature. A speaking knowledge of at least one foreign language and if only one it should be Spanish. Some philosophy and as much of art, music and other things apparently having nothing to do with engineering as possible.

This would bring to the world a type of engineer now rarely met—one, who besides being able to do the things required of him as an engineer, would be able to do other things vastly more important, it may be, and which only one with an engineering training could do. In a word, it would give to the world generals of engineering—masters of organized effort.

\* \* \* \* \*



In the present day maelstrom of social and industrial unrest which, according to the press of America and Europe, is menacing the civilized world, many curative measures have been suggested. The most powerful agent, however, is the workingman himself. I believe that the highest type of constructive "workingman" is the professional engineer, who is the connecting link between capital and labor.

Our entire material world, so far as social structure is concerned, can be very justly credited to the engineer, or to professional men intimately allied with the engineer. Our great buildings, our transit lines, our industrial plants, our national and international communications by wire, wireless, mail, steamship, and the distribution of our wares, all owe their origin and comparative perfection to the engineer.

And yet there is one phase of the engineering profession which is little understood—even by men of the calling—which is of even broader value to the nation than that of material advancement. This is the relation of the engineer, in the different branches of his science, to the worker—the hewer of wood, the forger of iron, the carver of stone—who typifies the constructive half of our civilization known as "Labor" and his equal and important intimacy with the other, the provisioning and directing half, usually termed "Capital."

If we are to solve the tense problems which have arisen through the last few years of bloodshed, misery and spreading dissatisfaction with certain of our living conditions, no saner, surer mediator can be found between the classes than the man who proves to both "upper" and "lower" strata his sincerity, working ability and right to adequate reward—the engineer.

The engineer is to the workingman who materializes his blue-prints and obeys his personal directions the symbol of science, of intellect, of education and of that "teamwork" which is the keynote of modern achievement. In his task and his ability he is one of the most powerful rebuttals of Bolshevism and industrial unrest.

To the employer and the capitalist whose profits depend upon his accuracy and energy, the engineer is the governing factor of business success in production. His creative vision, growing from his scientific training, and brought to fruition by the virility of his practical executive ability, is the foundation of modern achievement in a thousand ways.

But there is even a greater field of achievement for the engineer, one in which his past works have given him unique power and justification. This is in the line of unselfishness, creative, scientific participation in citizenship. America's towns, cities, States and the nation itself all need more expert aid and advice in the multifold problems of Government and growth. The engineer should devote more of his abilities to the general good, and the public should more persistently seek his aid.

In short, the engineer should enter public life, giving his talents and technical skill for the good of his neighbors. Local engineering societies in the various towns and cities should co-operate with their neighbors and with municipal authorities not only in technical problems, but in social and industrial, as well, because of their unusual knowledge of and acquaintance with people of all classes. Their ability as mediators of labor problems, their scientific knowledge of the details of public matters should be given without charge for the general good.

As to State and national problems we need more engineering skill in the direction of executive matters. Lawyers seem to predominate in nearly all lines of general public life; yet, these are questions of international importance in every branch of Government work which need administration by scientifically trained minds.

The lack of engineering experts is due as much to the unwillingness of the engineer to enter political life as to the public, in not urging him to do so. Engineers do not like politics; yet politics—in government—are necessary to every phase of modern society and industry. How many engineers are there in Congress, in Cabinet positions—even in public service commissions? In labor boards and boards of trade?

A great practical asset of American life is being wasted by the loss of engineering brains and training in the everyday problems of life. This means sacrifice on the part of the big-spirited engineer who devotes more or less of his time and energy to financially unprofitable public work. But this is a big period of world history and all of us must make sacrifices, as, indeed, most of us have, that we may perfect our civilization and perpetuate our national ideals against the ominous attacks of ignorant social discontent.

Our engineers, in order to fill the great positions in national and municipal life, however, must be educated along broader and deeper lines than are current in the university courses of to-day. At the present time our technical institutions are specializing too much. Vision, background, knowledge of life and the "humanities" suffer at the expense of an almost selfish concentration on laboratory methods.

We must break down the walls which we are building around the new generation of young men in our colleges—walls so high that they cannot see over. We must so teach that the boys who are going to become engineers will not remain "privates" or "non-coms," but can be field officers and line officers of the highest ranks, qualified to command and campaign from the hilltops, looking far ahead and with historic perspective.

We should develop in America a new kind of engineer by lengthening study courses, by broadening interests and by instruction in the wider range subjects which deal with all sides of modern life. Our international leadership in industry, commerce and political idealism

demand superior training for the young men who are to continue the administration of our affairs.

With the extension of international activities ahead of us as the results of war changes we must train our young scientific men in modern languages, in history, in economics, and above all in the essentials of general culture, that they may hold their intellectual "own" in competition with the scientists of other lands.

No longer is government simply the administration of a system of statutes, the collection of taxes and duties and the maintenance of a military system.

It is a complicated machine by which the citizens themselves drive forward the great industrial, social, commercial, 'aesthetic and idealistic entity of the State,—in which all their varied interests are inextricably bound. Commercial or industrial problems affect those of education and artistic development; the working classes, from the humblest wage-earner to the executive of the largest corporation, are dependent for their lives, comfort and happiness upon the efficiency of the Government's many branches of direction and agency.

And so it is that the designers of our railroads, our electrical systems, our manufacturing plants and machinery, our steamships, our sanitary systems, our defensive weapons—the army, navy, signal, supply and air services—should be prepared for their broadening task with a broadening, cultural education. Our future engineers should stand head and shoulders above the present professional man of to-day to fulfill their full duties to the nation and to themselves as citizens.

#### **Building and Construction Outlook Promising**

Contracts let in March show conclusively that building and construction works are getting under way despite the talk of high prices, says a report from the U. S. Department of Labor. With the March record—it is better than the March record in any year since 1911, excepting 1917, when Government construction made the record abnormal—in mind, the results of a study of building and construction conditions made by the Division of Public Works and Construction Developments in the United States Department of Labor takes on new significance. This study is based on 6 446 building and construction projects known to be contemplated at the signing of the armistice. The construction costs involved are \$1 892 275 000, and it is a safe conclusion that 50% of these projects, involving more than half the total construction costs, are yet to be started.

With March showing a remarkable increase over January and February in contracts let, and with approximately a billion dollar's worth of projects known to be contemplated, there appears to be justification for the prediction that 1919 will prove one of the greatest in American history for building and construction work.

### Engineers', Architects', and Constructors' Conference on National Public Works

The conference called by the National Service Committee of Engineering Council to consider the proposed creation by Congress of a National Department of Public Works, and other matters, was held in Chicago, Ill., on April 23d, 24th, and 25th, 1919. Delegates from 74 technical societies and related organizations representing a membership of over 100 000, were present. The sessions were well attended, great interest was shown in the discussions, and opinion seemed to be unanimous as to the importance and advisability of the creation of a National Department of Public Works.

A. S. Baldwin, M. Am. Soc. C. E., Vice-President of the Illinois Central Railroad Company, represented the American Society of Civil Engineers by authority of the Board of Direction. The following digest of the proceedings is made from Mr. Baldwin's report:

Chairman J. Parke Channing, of Engineering Council, called the conference to order, and M. O. Leighton, M. Am. Soc. C. E., Chairman of Engineering Council's National Service Committee, was elected permanent chairman. The provisional programme prepared in advance was adopted as the programme of the conference.

Upon a report of the Resolutions Committee the following was unanimously adopted:

"This conference of the delegates from engineering and related organizations respectfully recommends to the Public and to the Congress, that legislation be enacted covering the following principles:

"1. That the services and bureaus of the National Government having to do chiefly with matters of engineering and architecture, be grouped in one department to be known as the Department of Public Works.

"2. That the Department of Public Works comprise those works which are built and operated for the use of the Public.

"3. That the Department of Public Works be made available when desirable for the performance of special engineering and architectural work for the use of other Government bureaus."

For the purpose of furthering the passage of a bill creating a National Department of Public Works, the conference, by resolution, set up an Executive Committee, a Committee on Text of Bill, and a Campaign Committee. The Executive Committee was empowered to create a Finance Committee and other committees and to add to its own membership or to that of its committees. Mr. Leighton was made Chairman of the Executive Committee of 13 members. He also is *ex officio* Chairman of the Text of Bill Committee of 10 members, and

of the Campaign Committee of 48 members representing all sections of the United States.

It was decided by resolution that the conference should be known as "Engineers', Architects' and Constructors' Conference on National Public Works."

The Committee on Government Engineering Activities made a report with recommendations differentiating from other departments the bureaus which logically should belong to a National Department of Public Works.

During the afternoon session on April 25th there was an active discussion covering the relations of Engineering Council to national, state and local societies not members of Engineering Council, the summation of which was a strong endorsement of Engineering Council.

Mr. Baldwin read to the conference, by authority of the Board of Direction of the American Society of Civil Engineers, a telegram from the San Francisco Association of Members urging the Government to appropriate one billion dollars for the construction of roads and other public works to be administered by a National Board of Public Works. This telegram was referred to the Committee on Resolutions which took no action with reference to it.

Mr. Baldwin also presented a resolution adopted by the Board of Direction of this Society on April 15th, 1919, to the effect that the Board approves the general principle that the engineering activities of the Federal Government should be co-ordinated and concentrated under one head and also the action of the National Service Committee of Engineering Council in calling the present conference. These resolutions were read in connection with the offering of credentials and entered in the minutes of the meeting.

The conference, in adjourning, offered resolutions of thanks for courtesies extended by individuals, by the technical societies of Chicago, and to the Western Society of Engineers for facilities provided for the work of the conference.

#### **Death of Prominent Chinese Engineer**

Press dispatches announce the death on April 24th, 1919, at Hankow, China, of Tien Yow Jeme, M. Am. Soc. C. E., the Chinese engineer who constructed the Peking-Kalgan Railway, said to be the only Chinese railway built without foreign assistance. Mr. Jeme was a graduate of Sheffield Scientific School, Yale University. He was Chinese delegate on the Inter-allied Railway Commission dealing with the Trans-Siberian Railway.



### **Aims of the Engineering Division, National Research Council**

The Engineering Division of the National Research Council consists of representatives of the four Founder Societies, representatives of the four most important non-founder societies, and members at large. The representatives of the American Society of Civil Engineers are Messrs. George S. Webster, H. H. Porter, and Professor Anson Marston.

It is stated that the Engineering Division intends to stimulate and co-ordinate research in all branches of engineering. This, it is hoped, will be accomplished through the formation of committees, very largely outside of the Division's membership, for the study of specific problems. At the present time fourteen such committees have been organized and are more or less actively at work on particular problems.

The Engineering Division's conception of the committee idea is that the whole group should be representative of the subject under discussion. Individual members of a committee may be those who can give or procure financial assistance for the particular project, those who can act in an advisory capacity without devoting any great amount of time, and those who can devote the greater part or all of their time to research. The general principle that the beneficiaries of the research should supply the funds for carrying on the work is being followed to as great an extent as possible.

The active group within a committee very frequently is composed of the younger men in the profession requiring, of course, remuneration where they devote a considerable part or all of their time to the work. It is considered essential to have such groups within all committees in order to accomplish substantial results. In some of the committees one or more Government Bureaus may form the active group which supplies the funds and furnishes the men for carrying on a particular project. Working with them are men of large experience in the industries who can act in an advisory capacity without serious sacrifice of time. The Committee on Pyrometry may be taken as an example of this sort of co-operation. Dr. George K. Burgess, of the Bureau of Standards, a recognized authority on pyrometry, is Chairman of the Committee. There are twelve members of the Committee, comprising representatives of various manufacturers and users of pyrometers. Among these are the men who actually carry on experimental work under the general direction of the Committee.

Meetings of the Engineering Division are held in New York City approximately every two months. During the absence in Europe of Dr. Henry M. Howe, Chairman of the Engineering Division, Mr. G. H. Clevenger is Acting Chairman.

### Appointment of State Reconstruction Committees

Readjustment of relations between labor and capital, which occupies a large place in the attention of the public at the present time, is being considered by commissions in various States, according to the *Monthly Labor Review* of the U. S. Department of Labor. In the State of Wisconsin a special committee was authorized by the Legislature at a special session early in 1918 to report on "a comprehensive social and economic welfare programme of reconstruction after the war to include civilians whose status has been affected by the war, as well as soldiers." This report was presented to the Legislature in February, 1919.

In matters relating to labor it makes recommendations in regard to improving financial conditions of co-operative organizations; enactment of laws looking to fair wages and good working conditions; housing of workmen and others, including relief of congested districts; guaranty by law of the right, both of employers and employees, to organize and bargain collectively; furnishing employment by means of road building; extension of minimum wage law; rehabilitation of victims of industrial accidents; representation of organized labor on educational boards and provision for short industrial courses; teaching English, industrial history, and Americanization to aliens; extra educational opportunity to working boys and girls and enforced schooling of illiterate minors between the ages of 18 and 21; representation of labor on boards of directors of industrial corporations; social insurance; basic eight-hour day; equal pay for women; workmen's compensation; and regulation of private colonization projects in the interests of the settler.

In California a committee has been appointed by the Governor to co-operate with Federal, State, county, and municipal officials in dealing with unemployment, especially in relation to returned soldiers. The Legislature also passed a resolution creating a joint legislative committee to investigate and report on the question of unemployment. The Governor of the State of New York has appointed a reconstruction commission of 36 men and women. Massachusetts has a legislative committee of reconstruction, and, in Michigan, an interim committee of 20 men and women has been named by the Governor to study unemployment and other problems arising in the transition period between war and peace. This committee will make recommendations, as a result of its investigations, to a reconstruction commission. A State conference was held in Augusta, Me., in January, for the purpose of consultation on issues of reconstruction.

### New Civil Engineering Instructor at Princeton

Capt. Edward A. MacMillan, who served in France with the Engineer Corps of the United States Army, has been appointed Instructor in Civil Engineering at Princeton University.

**Good Roads Legislation**

The Post Office Appropriation Bill passed recently by the 65th Congress makes available to June 30th, 1921, a total of Federal and State moneys of \$550 000 000 for the construction and improvement of highways in the United States, to which may be added another \$10 000 000 appropriated for roads and trails in the National Forests. The expenditure of this vast sum is to be made under the direction of the Secretary of Agriculture, but the responsibility of determining plans to be approved and costs to be allowed will devolve on the Chief of the Bureau of Roads and Rural Engineering.

The funds are apportioned to the various States for the construction of highways as follows: one-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the population of each State bears to the total population of all the States; one-third in the ratio which the mileage of rural delivery routes and star routes in each State bears to the total mileage of such routes in all the States. Each State receiving benefits, must secure, through its highway department, the approval of the Secretary of Agriculture to the road projects that it is desired to build, and the Federal appropriation is then made available for construction according to such approved plan in an amount not exceeding 50% of the total cost. The plan is co-operative. The State must appropriate and use a sum of money equivalent to that made available from the Federal treasury.

Mr. Thomas H. MacDonald, formerly Chief Engineer of the Iowa State Highway Commission, who was recently appointed by the Secretary of Agriculture as Engineer in immediate charge of this work, with the title of Director of the Office of Public Roads and Rural Engineering, took up his new duties on May 5th, 1919. He predicts that 10 000 miles of new roads will be completed under the present plan before January 1st, 1920, and is perfecting his Washington organization on this basis. This involves co-operation with the forty-eight State Highway Departments which are already in existence. The regulations issued under the Act have been carefully revised in the light of past experience and from suggestions offered by State Highway Departments, the standards for plans, specifications, and estimates have been modified to meet special conditions existing in some of the States, and other changes in practices and procedure have been and are being made, all with the definite object of speeding up the work.

The War Department has just announced that it will turn over 20 000 motor trucks to the Secretary of Agriculture for use in the construction of Federal Aid roads, in accordance with the provision of the Rural Post Roads Act. Of these trucks 11 000 are new and the remainder have been used in war work, their total value being more than \$45 000 000. It is contemplated that other equipment that will

be useful in this work will be turned over by the War Department in the near future.

The Director General of Railroads has announced the decision to reduce the present regularly published tariff rates on specified road-building materials when for use in Federal, State, County, Township, or Municipal Government road work. The reduced rate on all road material will be 10 cents per net ton less than the regularly published tariff rates for the transportation of these materials for commercial uses, but with a minimum charge of 40 cents per net ton, except where the published commercial rate is less. In that case, the regularly published rate shall apply. The freight must be paid by the Government, but the material can be consigned in care of the contractor.

The fact that about 90% of the internal commerce of the country is hauled, first or last, over the highways, makes the Federal highway policy an important factor in transportation and therefore a problem which demands the thought of every engineer.

#### Licensing of Engineers

That the question of the licensing of engineers is becoming a vital issue among members of the Profession is evidenced by the manner in which it has been discussed by technical societies in various parts of the United States.

At its Annual Convention, the members of the Ohio Engineering Society recently voted unanimously in favor of such a movement, and it is expected that a bill to license the engineers of the State will soon be presented to the Legislature for action. Two licensing bills have been presented to the State Legislature of Michigan, one of which was drawn up by the Michigan Engineering Society providing for the certification of engineers who engage in certain specific branches of engineering and for the organization of a Board of Examining Engineers; the second one combines the licensing of engineers and architects. It is said to be certain that one of the two bills, or a compromise bill, will be passed by the Legislature. The question has also been discussed in Indiana where a bill has been submitted by the Legislative Committee for the Architects and Structural Engineers of that State. Under the proposed bill, structural engineers will be examined in Structural Engineering and architects in Architecture, but either license will permit of practicing in the whole field of Architecture and Structural Engineering.

The Committee on Legislation of the American Association of Engineers, appointed in 1918 to obtain information concerning bills, proposed and passed upon, for the licensing of engineers in the various States, and to draw up a standard license law, has recently presented a Preliminary Report on the subject. In this report the Committee reviews the existing and proposed bills and outlines the essentials for a new law.

### 11th Engineers Parade in New York City

After long delay in embarkation from France, the 11th Engineers, recruited early in 1917 through the efforts of the Military Engineering Committee of New York, arrived in New York City in two sections, and on April 30th, 1919, paraded down Fifth Avenue which was lined with cheering thousands.

This regiment is famous as the first to sustain casualties in the American Expeditionary Forces and is known as the "Fighting Engineers", because the men threw down their picks and shovels, took up rifles and helped General Byng's British forces hold back the German rush at Cambrai.

The regiment was led by its commander, Col. William Barclay Parsons, M. Am. Soc. C. E., and his staff who marched on foot. The route was down Fifth Avenue from Ninety-sixth Street to Thirty-third Street. The men marched well and carried full equipment with bayoneted rifles. They wore their trench hats. Their physical condition and size, as well as their rapid cadence in marching, created much favorable comment.

Col. Parsons was accompanied by Lieut.-Col. William T. Chevalier, Assoc. M. Am. Soc. C. E. Maj. Charles D. Drew, M. Am. Soc. C. E., led the first battalion, and Maj. B. A. Value, the second.

The parade was reviewed from an official stand at Eighty-second Street by Governor Smith, of New York, Maj.-Gen. David C. Shanks, Commander of the Port of Embarkation, Brig.-Gen. F. V. Abbot, M. Am. Soc. C. E., Acting Chief of Engineers, U. S. A., Mayor Hylan, of New York City, J. Waldo Smith, M. Am. Soc. C. E., Chairman of the Military Engineering Committee, Chas. Warren Hunt, M. Am. Soc. C. E., Chairman, Parade Committee, and others.

Great and continuous applause greeted the regimental colors, the staffs of which were decorated with five silver bands, each denoting a citation.

The parade swung west on Thirty-third Street to the Hotel Pennsylvania where dinner was served to the entire regiment by invitation of the Military Engineering Committee. Col. Parsons was the only speaker, and in the course of his remarks announced that during the regiment's period of service 68 enlisted men had won officers' commissions.

After the dinner and a reception at the 71st Regiment Armory, the regiment entrained for Camp Upton where it was demobilized during the ensuing week.

Col. Parsons, Lieut.-Col. Chevalier, Maj. Hulsart, D. S. C., Maj. Drew, Maj. Buck, and many other officers of the regiment are members of the American Society of Civil Engineers.

The 11th Engineers was recruited in New York City, and the men were very carefully selected for the work they were expected to do.



They were trained at Fort Totten. About 80% of the original members of the regiment returned with it.

The Military Engineering Lectures Committee was self-appointed and numbered among its members prominent representatives in the New York district of the four National Engineering Societies, including their presidents and secretaries, The Engineers' Club, and the General Contractors' Association. In the winter of 1915-16, it organized a course of military engineering lectures given by officers of the Corps of Engineers then assigned to the Eastern Department, U. S. A., by courtesy of Maj.-Gen. Leonard Wood. There were 3 500 registered for these lectures, and the immediate result was the voluntary drilling of considerable numbers and many applications for the first Plattsburg Training Camp.

Following the lectures, the Committee organized the Engineering Division of the Preparedness Parade, in which more than 7 000 took part.

The Committee was strong for preparedness from the start and immediately on the declaration of war, under the direction of the Chief of Engineers, U. S. Army, recruited the 11th Engineers' Regiment. This work was accomplished in less than two weeks from the time the order was given. Great care was exercised in the selection, in order to secure men of the highest class, both physically and mentally, who could be capable of successfully prosecuting any work which might be assigned to them, or, in other words, to carry out the motto of the 11th Engineers "If it can't be done, do it." For this reason it required painstaking efforts on the part of those in charge of enlistment, so that out of 6 000 presenting themselves or making application for enlistment only 1 221, or about 1 in 5 were accepted.

Since the recruiting of the 11th Engineers, the work of the Committee has been confined to assisting the Government authorities in various ways from time to time, including the recruiting of men for special purposes, such as mechanics for the Ordnance Base in France and men for other engineer regiments.

#### **New York State's New Highway Commissioners**

Col. Frederick Stuart Greene, M. Am. Soc. C. E., recently appointed State Highway Commissioner for New York, has completed the appointment of his official staff by naming Paul Schultze, M. Am. Soc. C. E., Irving V. A. Huie, Assoc. M. Am. Soc. C. E., and Mr. Charles Van Amburgh, first, second and third deputies, respectively. Maj. Huie served in France as a member of the First United States Engineers of the Seventy-seventh Division, and will be in charge of maintenance and repairs. He is a graduate of the University of New York and entered the army from the engineers' training camp at Plattsburg. After his first engagement, he was promoted for gallantry.

### City Limits now Fixed by Automobiles and Good Roads

City limits no longer are fixed by municipal ordinance, but by automobiles and good roads, observes a *Bulletin* issued by the U. S. Department of Labor. As a domestic market a city's territory is limited only by the possibilities of motor-truck transportation. Facility and economy in this field depend on the character of roads; the better the roads the bigger the city.

The American city which does not have a market diameter of 200 miles, is not approximating its commercial possibilities; it has not developed its "home market" to its maximum business productiveness. In nine cases out of ten these cities permit their business opportunities to stall in a mudhole.

The United States Government has voted \$266 750 000 for Federal aid to States in their road-building programme. This sum either is available or will be by the end of the fiscal year 1921. Under the Federal-aid plan the United States Government stands practically half the cost of construction. If the States, therefore, avail themselves of this opportunity to translate Federal funds into permanent State improvements, the money spent on road construction by States and the the Federal Government to the end of the fiscal year 1921 will be not less than \$533 500 000.

Twenty years ago the market limit of the average city was about 10 miles. It was no farther removed from the heart of the town—courthouse square, if you please—than it was possible for a team to pull a loaded wagon on a dirt road and make the round trip between the morning and evening chores. Much is said these days about "seasonable employment," meaning such work as must be done in certain favorable seasons of the year. Seasonable employment is another term for periodic idleness. It will be eliminated in a 100% efficient industrial system. The mud road makes "seasonable business" which means that periodically there is practically no business because roads are impassable. A 100% efficient business system will eliminate periodic suspensions of business activities, even if to do so means the construction of hard-surface roads.

### National Legislative and Departmental Information Service

In response to frequent expressions of need, Engineering Council announces the establishment of a National Legislative and Departmental Information Service for engineers in all branches of the Profession. Information relative to engineering statistics, research, and construction, as well as of matters before Congress involving engineering considerations, will be furnished without charge by addressing the National Service Committee, M. O. Leighton, Chairman, 502 McLachlen Building, Washington, D. C.

### The New Price Revolution

Irving Fisher, Professor of Political Economy at Yale University, read an address before a conference of Governors and Mayors at the White House, Washington, D. C., early in March last, from which the following is abstracted:

"At the present time there is a marked halt in production. Industry is slowing down. Unemployment of labor increases. Some industrial concerns are failing to earn profits, and others are suffering the dissipation of their accrued profits, because, even by shutting their plants down, they can not save certain of their expenses or any of their fixed charges. The Government's revenues, dependent as they are upon the national income, may fall short at the very time we need them most. In brief, we are threatened with a widespread business depression and from peculiar causes, for the unsound conditions usually preceding a widespread business depression are absent.

"The main reason why business is not going ahead better is that most people expect prices to drop. The merchant is selling, but not buying. The manufacturer holds up the purchase of his raw materials. People quote the disparity between present prices and those prevailing 'before the war,' and decide they will not buy much until present prices get down to 'normal.' This general conviction that prices are sure to drop is putting a brake upon the entire machinery of production and distribution. Readjustment waits because we keep on waiting for it. We have waited in vain for over three months. It is interesting to observe that many manufacturers think that prices must come down, including the price of labor; but they are ready to demonstrate to you that their own prices can not come down, nor can they pay lower wages. Almost everything they buy somehow costs twice as much as before the war, and their labor is twice as dear. They can not pay their labor less if labor is to meet the increased cost of living. Now, as a matter of fact, when we investigate almost any individual one of the so-called high prices for industrial products we are likely to find that individually it is not high; that is, it is not high relatively to the rest. Our quarrel is with the general level of prices. \* \* \*

"All prices have risen, but some have risen more, some less, than the average for particular reasons affecting each industry. In some cases an improved organization of both employers and employees has enabled them to combine against the public and take full advantage of the price advance. The war brought about an abnormal demand for certain products like copper and steel, and they advanced faster than the average. The abnormal demand having disappeared, these prices are being adjusted downward. Wheat is a case where demand increased and at the same time certain of the usual sources of supply—Russia, Australia, and Argentina—disappeared, with a resultant abnormal price increase. The closed sources of supply have opened again, and wheat prices in the world market have dropped. In some cases, as in many of the industries making building materials, the war meant a great slackening in demand, an enforced curtailment in use by Government order. In such instances we are likely to see an upward swing in prices as the suppressed demand again makes itself felt. To-

day we are witnessing throughout the country such price readjustments, up and down, but the general price level has shown little sign of falling, as is evidenced by price index numbers. It is apparent to every thoughtful observer that some great force has affected all prices, creating a new standard to which they are all conforming.

"The fundamental practical question confronting business men is whether the general level of prices is going to fall. In my opinion, it is not going to fall much, if at all. We are on a permanently higher price level, and the sooner the business men of the country take this view and adjust themselves to it the sooner will they save themselves and the Nation from the misfortune which will come if we persist in our present false hope.

"The general level of prices is dependent upon the volume and rapidity of turnover of the circulating medium in relation to the business to be transacted thereby. If the number of dollars circulated by cash and by check doubles while the number of goods and services exchanged thereby remains constant, prices will about double.

"The great price changes in history have come about in just this manner. The 'price revolution' of the sixteenth century came upon Europe as a result of the great influx of gold and silver from the mines of the New World. Europe was flooded with new money. More counters were used than before in effecting exchanges and prices became 'high.' People talked then of temporary 'inflation', just as they talk of it now. But it was not temporary; it was a new price level.

"A similar increase in prices all over the world occurred between 1896 and 1914, following the discovery of the rich gold fields of South Africa, Cripple Creek, and Alaska, the invention of the cyanide process in mining, and the vast extension of the use of bank credit. \* \* \*

"Business men should face the facts. To talk reverently of 1913-14 prices is to speak a dead language to-day. The buyers of the country, since the armistice, have made an unexampled attack upon prices through their waiting attitude, and yet price recessions have been insignificant. The reason is that we are on a new high-price level, which will be found a stubborn reality. Business men are going to find out that the clever man is not the man who waits, but the one who finds out the new price facts and acts accordingly."

#### **Invitation to Members of the Society Visiting Spokane, Wash.**

The Spokane Engineering and Technical Association extends a cordial welcome to any member of the National Engineering Societies, who may be in the city temporarily, to visit the headquarters of the Association. Meetings of committees are held every day except Tuesday and Saturday, and the members of the Association would be glad to welcome visitors at the luncheons in order that they may keep in closer touch with engineering problems in different parts of the United States and broaden their field of acquaintanceship. The time and place of the meetings may be obtained by addressing the Secretary of the Association, A. D. Butler, Assoc. M. Am. Soc. C. E., City Engineer, Spokane, Wash.

### Ordnance Technical Staff Organized

With a view to affording more satisfactory means for originating, designing, developing, testing, and adopting new ordnance, ordnance materials, and other implements of war with the production of which the Army Ordnance Department is charged, the Chief of Ordnance some weeks ago directed the organization in his office of a technical staff, with Col. Colden L'H. Ruggles, Ordnance Department, at its head, and details for the functioning of this organization have about been perfected. The staff includes an ordnance committee, and artillery, ammunition and explosives, aircraft armament and small arms, ordnance theory and instruments and metallurgy, and administration sections. As the representative of the Chief of Ordnance, the Chief of the Technical Staff confers with the Line and the General Staff of the Army regarding types of ordnance desired to be developed, advises the Chief of Ordnance as to the progress of ordnance development in and outside of the Ordnance Department, arranges and supervises a close liaison with and the co-operation and support of the engineering and scientific societies of the country in the development of ordnance engineering, attends trials of ordnance material at proving grounds and in the field and when possible attends trials of ordnance in other services in this country and abroad, reviews and recommends action on all proposed experimental and research work involving improvements in existing types or development of new types of ordnance material, recommends to the Chief of Ordnance new types of ordnance, acts as president of the Ordnance Committee, and attends to many other matters.

One of the most important parts of the staff is the Ordnance Committee. This includes officers of other services detailed as members of the Committee, chiefs of the artillery, ammunition and explosives, aircraft armament and small arms and ordnance theory, instruments and metallurgy sections of the technical staff, the officer in charge of any technical branch of the technical staff when a subject relating to his specialty is under consideration, the executive assistant to the chief of the technical staff, and such other officers of the technical staff as may be designated by its chief for consideration of a particular subject. The Ordnance Committee reviews and recommends action on all proposed experimental and research work relating to ordnance, makes recommendations of new types for development and design, examines, consolidates and acts on equipment lists submitted to it, arranges for approval by General Staff, prescribes tests for acceptance of types of ordnance, attends trials of ordnance, and makes recommendations as to acceptance after tests. Officers of other services, members of the Committee, act in liaison between the technical staff and their respective branches, submit matters for consideration of the Committee that originate in their respective branches, and generally



keep in touch with the specialists of the technical staff regarding work affecting material relating to their respective branches. In this way representatives of the several arms of the service are enabled to participate in the origination, design, development, determination of types, and trials of ordnance they are to use, and those things that those branches indicate that it needs or wants may be reconciled and developed, with the aid of the designing and production experts of the Ordnance Department, within the limits prescribed by technical possibilities. More—much benefit is expected from the co-operation with the scientific societies of the country that is being arranged for. Already liaison has been established with the American Society of Mechanical Engineers, and it is practically certain that the American Society of Electrical Engineers, American Chemical Society, American Society of Automotive Engineers and other organizations will be brought into association with the technical staff. Further, a number of scientists are working individually on certain ordnance problems under the auspices of the technical staff. The line of the Army already has indicated its approval of the system represented by the newly established technical staff, and the chiefs of field artillery and coast artillery have designated officers to represent their branches of the service on the Ordnance Committee.

#### **New York City Public Service Commission To Be Reorganized**

The New York State Senate, without debate, and on a short roll call, unanimously adopted on April 15th, 1919, the plan of Governor Smith for the reorganization of the Public Service Commission in New York City.

On May 3d, 1919, Gov. Smith announced the appointment of Lewis Nixon as regulatory Public Service Commissioner in New York City at a salary of \$15 000 per year. The appointment was made immediately after the Governor signed the Foley Bill which provides for a single-headed commission in the First District.

Mr. Nixon has been State Superintendent of Public Works, at \$8 000 per year. He is succeeded in that office by Edward S. Walsh who had been his deputy.

Governor Smith announced that the post accepted by Mr. Nixon had been offered to Col. William Barclay Parsons, M. Am. Soc. C. E., who has just returned from France in command of the 11th Engineers, and that Col. Parsons had declined it.

There are two so-called Foley Bills under which the Public Service Commission of New York City, or First District, consisting of five members is to be replaced by two commissioners—one to exercise regulatory functions and the other to have charge of construction. The latter post has not yet been filled.

### Topographic Map of the United States

The *Proceedings* for April, 1919 (page 422), contained a letter urging the rapid completion of the topographic map of the United States, addressed to the Secretary of the Interior by M. O. Leighton, M. Am. Soc. C. E., Chairman of the National Service Committee of Engineering Council. In order to bring the matter up to date and for the information of the membership, a reply to that letter from the Hon. Franklin K. Lane, Secretary of the Interior, is presented herewith:

“WASHINGTON, D. C., APRIL 15, 1919.

“MR. M. O. LEIGHTON, *Chairman*,

“National Service Committee,

“Engineering Council,

“Washington, D. C.

“DEAR MR. LEIGHTON:—I have before me your statement of the essential relation of the topographic mapping of the country to good engineering and the economic development of our resources, and your presentation of the matter strikes me as warranted by the facts of which I am cognizant. An adequate map of the United States at the earliest possible date is of course the programme to be endorsed.

“Your information is correct that the Geological Survey now has available a trained personnel sufficient to permit a large expansion of the Government's activities, in topographic surveys. This increase in number of topographic engineers is a happy by-product of the assistance rendered the Army by the Department of the Interior. As you may know, a summer school was established for training young engineers in military mapping and every method adopted to furnish the Engineer Corps with officers for this specialized service both overseas and in this country. Most of the men so trained are now available to supplement the regular topographic force of the Geological Survey, the members of which are also now returning to their civilian status. For this reason, an annual expenditure of \$1 000 000 on the topographic map of the United States is now justified both by the public needs and the ability of this Department to perform this work economically and effectively. In such a programme it is hoped that the States might increase their co-operative contributions to \$500 000, especially as the co-operation for the two years past was necessarily interrupted by the military mapping being largely confined to a few border States. I am told that in several States the officials are now urging the completion of the co-operative mapping of their States within the next few years.

“The readjustment of the appropriations for topographic work as between the Department of the Interior and the War Department is not yet complete, but my recommendation to the 65th Congress was for the restoration of the appropriation item for topographic surveys under the Geological Survey to the pre-war figure of \$350 000, and my present purpose is to submit a supplemental estimate to the 66th Congress, as you suggest, increasing this to \$500 000. The support of this larger programme by Engineering Council, representing as it does the great national engineering societies, will be appreciated.

“Cordially yours,

“FRANKLIN K. LANE.”

In connection with this matter, the following resolution concerning topographic mapping, adopted by the Engineers', Architects', and Constructors' Conference at Chicago, Ill., on April 25th, 1919, may also be of interest to the membership:

"The Engineers, Architects and Constructors Conference on National Public Works, composed of the representatives appointed by 74 National, State and Local Organizations, with an aggregate membership of over 100 000 men, realizes the great importance of adequate maps for the economical planning and construction of a large proportion of engineering works.

"With much wisdom the Federal and State Governments are now entering upon a programme of highway construction which constitutes the greatest engineering project ever undertaken by our Government, and which will result in the expenditure of many billions of dollars of public funds in the next decade. This highway construction, as well as many other important public and private engineering undertakings, such as drainage and reclamation projects and others—in the aggregate of tremendous magnitude—demand for economical accomplishment the best type of information such as is afforded by the Topographic Maps issued by the Federal Government in co-operation with many of the States. These maps are completed for only about 40% of the area of the country. The past rate of progress, if continued, will require between 80 and 100 years to complete the maps for the whole United States.

"It is apparent to this Conference that by having such maps the saving in the cost of engineering works to be constructed during a very small portion of this time will more than pay for the making of these maps. Therefore, it will be greatly to the public advantage if the completion of these maps can be hastened as rapidly as men can be trained to do the accurate work required.

"In view of the foregoing statements, which express the sense of this Conference,

*"Be it Resolved:* That the facts be presented to the President and to the Congress, and that they be urged to make adequate provision for the entire work of completing the Topographic Map of the United States in the shortest possible time, compatible with requisite accuracy; and

*"Be it Further Resolved:* That inasmuch as Engineering Council has already taken up this matter with Federal Government Departments, their efforts to hasten the completion of the Topographic Map be endorsed by this Conference and that this Resolution be entrusted to them to present to the President, The Secretary of the Interior, the members of the Congress, and to make such other disposition of it as will, in their judgment, further the end desired."

#### **Annual Meeting of the American Society for Testing Materials**

The Annual Meeting of the American Society for Testing Materials will be held at Atlantic City, N. J., June 24th-27th, 1919. The Hotel Traymore will be headquarters. A topical discussion on magnetic analysis will be one feature of the programme.

### Five Generations Crowded into Five Years

The Victor Saw Works, of Springfield, Mass., published recently in the *American Machinist* the advertisement quoted below, which is reproduced here as being especially appropriate to the times:

"In change of conditions the gap that divides 1919 from 1914 is as great as the gap that divides the Twentieth Century from the Eighteenth.

"The man who looks to a return of the conditions of 1914 in adjusting business or social relations is as sadly out of joint as if he looked to a return of the conditions of 1800.

"Think of things these short five years have witnessed!

"Machines loaded with men and cargoes fly through the air for long distances at the rate of a hundred miles an hour. Ships travel under the seas at speeds that rival the fastest sailing vessels of a hundred years ago. Men on the surface of the earth talk through wireless telephones to men flying a mile in air.

"Great tonnage of freight is moved by trucks over open roads for greater distances and at higher speeds than were achieved by our early railroads.

"Ships that required years for construction are built in a month. Time of production for commodities of all kinds has been cut and cut again. Processes of manufacture have been revolutionized.

"America has passed from a debtor nation, owing billions, to a creditor nation, lending billions. Thirty thousand security holders in America have expanded into thirty million.

"The impossibilities of sixty months ago have become common occurrences.

"Financially, commercially, socially, the world has been turned upside down.

"We are in a new world. The past and its conditions have gone never to return. We are living in a new era. It's time we realized it.

"If you have something to sell—go ahead and sell it. If you need anything—go ahead and buy it. You will not be able to either buy or sell at the price level of five years ago. Stop thinking about it. Do business."

### American Railroad Association

The American Railway Association has been reorganized as the American Railroad Association, comprising five sections devoted to operating, engineering, mechanical, traffic and transportation matters. The mechanical section includes the former American Railway Master Mechanics' Association and the Master Car Builders' Association, whose work is combined with that of similar organizations in other departments, through the parent organization. A circular has been issued by the new association giving the personnel of the general committee which will have charge of the convention at Atlantic City, N. J., June 18th to 25th, 1919, inclusive. Thirty-one committees will report at the convention.

### **New York-New Jersey Vehicular Tunnel**

On April 11th, 1919, Governor Smith of New York State signed the bill appropriating \$1 000 000 as that State's share toward the construction of the New York-Jersey City Vehicular Tunnel. As Governor Edge of New Jersey has also signed a bill appropriating a like amount as New Jersey's share toward this work, the inauguration of the project seems to be assured.

The tunnel is to be built under the Hudson River between New York City and Jersey City, N. J., for the sole use of pedestrians and vehicles, and it is estimated that its total cost, one-half of which is to be borne by each State, will be \$12 000 000. The work is to be done by contract as directed by the New York State Bridge and Tunnel Commission in co-operation with the New Jersey Bridge and Tunnel Commission. These Commissions are also authorized to contract for the joint operation, repair, and maintenance of the tunnel as well as the collection of tolls.

The New York State Commission is composed of Messrs. George R. Dyer, Chairman, E. W. Bloomingdale, Vice-Chairman, McDougall Hawkes, Alexander J. Shamberg, and John H. Delaney, with Morris M. Frolich as Secretary.

This tunnel project was the subject of an informal discussion at a meeting of the Society on March 19th, 1919, which was opened by Edward A. Byrne, M. Am. Soc. C. E. This discussion is published in this number of *Proceedings*.\*

### **Association of Members of American National Engineering Societies in Cuba**

The organization, on February 21st, 1919, of the Association of Members of American National Engineering Societies in Cuba, with headquarters in Havana, is announced. Membership in the Association is restricted to the American National Engineering Societies, and the object is to foster the interests of the Engineering Profession in Cuba by bringing the members of the various National Societies on the Island into closer touch with one another and with the social and professional opportunities accruing from such association in a foreign land.

The officers of the Association for 1919 are: President, Luther Wagoner, M. Am. Soc. C. E.; Vice-President, George H. Nolan, M. Am. Soc. C. E.; Secretary, T. Carlile Ulbricht, Mem. Am. Soc. M. E.; and Treasurer, Wallace R. Lee, Mem. Am. Soc. M. E. Until permanent headquarters are secured, the meetings of the Association are being held at the rooms of the American Club.

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\* See p. 249 of Papers and Discussions.



### **Memoirs of Deceased Members Requested**

An Associate Member calls attention to the fact that the 1919 Year Book chronicles the names of more than 550 deceased members, memoirs of whom have never been published by the Society. He suggests that the attention of the membership be called to the matter with a view to securing from them data or complete memoirs of these deceased members so as to bring the subject as nearly up to date as possible.

The Publication Committee therefore requests the membership to look over these 550 names and to send to *Proceedings* any data they may have or can secure regarding men in the list whom they have known.

It should be stated that as soon as the death of a member is officially reported to the Secretary's office, an effort is promptly made to secure data for a memoir from the family and friends of the deceased. It is failure to respond to these requests which has resulted in the lack of memoirs mentioned.

### **Business Training for Engineers**

The Commissioner of Education has issued a call on behalf of the Conference Committee on Commercial Engineering recently appointed by him, for a public conference on business training for engineers and engineering training for students of business. This conference, national in scope and in character and fully representative of all interests, will be held at the New Willard Hotel in Washington, D. C., on Monday and Tuesday, June 23d and 24th, 1919. All educational institutions, commercial organizations, manufacturing associations, and educational and engineering societies are cordially invited to co-operate and to designate one or more representatives to attend the conference. Prominent engineers, educators, and business men will be invited to discuss the following major topics: Business Training for the Engineer; Engineering Training for Commercial Enterprises; Significance of the War Experience for Engineering Education; Training of the Engineer for Overseas Engineering Projects.

### **Appointment in Civil Engineering**

The Board of Governors of the University of Manitoba, Winnipeg, Man., Canada, announces that it will proceed shortly to appoint a Professor of Civil Engineering to take charge of the Department, at an initial salary of \$3 500 per annum. Applications for the position, accompanied by a full statement of training and experience and ten copies of testimonials, will be received by the Secretary of the Board of Governors, up to July 15th, 1919.

**Committees and Representatives of the Society Appointed  
at Last Meeting of Board of Direction**

The following is a summary of committees and representatives of the Society appointed at the meeting of the Board of Direction, April 14th-15th, 1919:

A. S. Baldwin, M. Am. Soc. C. E., as delegate to Conference of National Service Committee of Engineering Council, Chicago, Ill., April 23d-25th, 1919, to Consider Establishment of a National Department of Public Works, etc.

Messrs. George S. Webster, H. H. Porter, and Anson Marston as representatives on the Engineering Division of the National Research Council.

John R. Freeman, M. Am. Soc. C. E., to convey the salutations of the Society to the Engineering Congress, in Java, in 1920.

Robert A. Cummings, M. Am. Soc. C. E., as a representative of the Society on the Board of Directors of the American Welding Society.

**New Public Service Commissioner for New York State**

On April 15th, 1919, Governor Smith sent to the New York State Senate the name of his Counsel, Joseph A. Kellogg, of Glens Falls, for member of the up-State Public Service Commission, to succeed Jerome L. Cheney, now a Deputy Attorney-General. Mr. Kellogg, who is a former Supreme Court Justice, conducted Gov. Smith's campaign from the Syracuse Headquarters of the Democratic Committee last fall. The Governor's first official act was to name him as Counsel, at \$7 500 per year. As Public Service Commissioner he will receive \$15 000 for a term of five years.

**Engineering Societies to Assist Joint Employment Service  
of Federal, State, and Civic Bodies**

During the war the four national engineering societies, Civil, Mining, Mechanical and Electrical, under the auspices of the American Engineering Service Committee of Engineering Council rendered valuable aid to the Government, placing many technical men in the Army, Navy, and industries of the country at a time when they were greatly needed. With the signing of the armistice the need for Government service naturally ended, but the greater problem of returning to civil employment the discharged soldier and sailor at once

presented itself, and is daily becoming graver and more urgent. To meet this the four societies organized the Engineering Societies' Employment Bureau with the secretaries of the societies as directors.

At the invitation of Col. Arthur Woods, U. S. A., Special Assistant to the Secretary of War, the Engineering Societies have been requested to bring to the attention of their members the availability of not only the professional men who are returning from France, but also the supply of miners, mechanics, and other skilled labor among the enlisted men, and to emphasize that Army discipline has not only made these men quicker thinkers but also more willing and obedient workers. Their army service has been conducive to regular habits and clean living.

Further, the military instruction which they have received has increased the mens' powers of concentration. The War Department desires to bring before the employers of skilled labor the fact that the employment of discharged soldiers will be advantageous to the employer and economically beneficial to the country.

The following is a list of the vocations of the men who are now returning:

Auto Mechanic	Laborer (Classified)
Blacksmith	Lineman and Cableman
Boilermaker	Machinist and Mechanic
Bricklayer	Metal Finisher
Carpenter	Millwright
Air or Gas Compressor Operator	Miner or Quarry Worker
Concrete or Cement Worker	Painter
Construction Foreman and Superintendent	Pipefitter
Crane Operator	Photographer
Draftsman	Plasterer
Electrician	Railroad Operating Man
Engineer	Refrigeration Operator
Engineman and Fireman	Rigger and Cordage Worker
Foundryman	Sheet Metal Worker
Gasoline Engineman or Repairman	Structural Steel Worker
Gas Plant Worker	Telegraph and Wireless Man
Hydraulic Press Operator	Transportation Man
Instrument Maker	Water Supply Man
	Welder and Cutter

To this end members of the Society are requested to take up the matter actively and to write to W. V. Brown, Manager of the Engineering Societies Employment Bureau, 29 West 39th Street, New York City, specifying opportunities for placing men in any of the industries in which they are acquainted.

### Classification and Compensation of Railway Engineers

In response to a request of Engineering Council, the Board on Wages and Working Conditions of the U. S. Railroad Administration gave a hearing to engineers, in Washington, D. C., March 31st, 1919, which was continued on the following day. Classification and compensation of technical engineers on the staffs of the railway systems under Government control were discussed and many data presented.

There appeared for Engineering Council, Messrs. Francis Lee Stuart and Frank H. Clark, of the Railroad Section of Council's Committee on Classification and Compensation of Engineers, and Mr. M. O. Leighton in charge of Council's Washington office. For the American Association of Engineers there were present Secretary C. E. Drayer and Messrs. W. C. Bolin, Willard Beahan, C. D. Calvert, F. W. Strickler, and J. B. Parsons. The full Board was present and manifested unusual interest in the entire proceedings, taking copious notes and asking many pertinent and important questions.

The first day's session having been devoted chiefly to the interests of the Civil Engineers, on the second day attention was directed more particularly to the Mechanical, Electrical, and Signal Engineers. Owing to the lack of witnesses available by Engineering Council and the Association, Chairman Gaines, of the Board, arranged for the appearance of engineers connected with the Government railways.

Various engineers were called as witnesses from time to time, and a few regional directors were requested to give their opinions. A clear case seemed to have been established for the feasibility and desirability of classifying the technical engineering positions of the railway staffs, and establishing standard compensations for them, possibly with a provision for a minimum for inexperienced men and a maximum for experienced engineers in the several ranks.

## ANNOUNCEMENTS

The Reading Room of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, New Year's Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 6 P. M.

## FUTURE MEETINGS

June 4th, 1919.—8.30 P. M.—This will be a regular business meeting of the Society, the programme for which will be announced later.

## ANNUAL CONVENTION

The Forty-ninth Annual Convention of the Society will be held in the "Twin Cities" of St. Paul and Minneapolis, Minn., from June 17th to 20th, 1919, inclusive.

The general arrangements for the Convention are in the hands of the following Committees:

*Committee of the Board of Direction*

W. L. DARLING, *Chairman*

EDWARD E. WALL

CHAS. WARREN HUNT

*Local Committee*

R. D. THOMAS, *Chairman*

W. C. ARMSTRONG

F. H. BASS

R. B. C. BEMENT

F. W. CAPPELEN

OSCAR CLAUSSEN

WILLIAM DE LA BARRE

F. E. HOUSE

W. H. HOYT

W. N. JONES

F. C. SHENEHON

HORACE E. STEVENS

HOWARD E. STEVENS

P. E. THIAN

W. T. WALKER

G. L. WILSON

L. P. WOLFF

A circular giving full information as to the general programme, transportation, hotel rates, etc., was issued on May 15th, 1919.

CONTRIBUTIONS TO PROCEEDINGS REQUESTED BY  
PUBLICATION COMMITTEE

The Committee on Publications will be glad to receive communications of general interest to the Society, and will consider them for publication in *Proceedings* in "Items of Interest". This is intended to cover letters or suggestions from our membership covering matters which are not of a technical character. Such communications, however, must not be controversial or commercial.



### ROLL OF HONOR

Now that the war is over, the monthly publication in *Proceedings* of the Roll of Honor has been discontinued. It is planned to publish later for permanent record a list of all the members of the American Society of Civil Engineers whose names have appeared on this list.

### ENGINEERING SOCIETIES EMPLOYMENT BUREAU

Engineering Societies Employment Bureau, established December 1st, 1918, as an activity of Engineering Council, is managed by a board made up of the Secretaries of the four Founder Societies, funds for its maintenance being provided by these Societies. The Bureau already is co-operating with engineering organizations in all parts of the country and with the Professional Section of the United States Employment Bureau. It is desirous of increasing such co-operation by working with local engineering associations and clubs. The work of the Bureau since its inception has been largely in the line of securing employment for men retiring from government war service. Members of the American Society of Civil Engineers who desire to register with this Bureau should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Employment Bureau, 16th Floor, Engineering Societies Building, 29 West 39th Street, New York City.

### SEARCHES IN THE LIBRARY

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York City, who will gladly give information concerning the charges for the various kinds of service. For a more comprehensive statement in regard to this matter see pages 314 and 315 of *Proceedings* for March, 1919.

### PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and, on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee, are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions only will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

The Board of Direction has adopted rules for the preparation and presentation of papers, which will be found on page 35 of the Year Book for 1919.

#### LOCAL ASSOCIATIONS OF MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

##### San Francisco Association, Organized 1905.

E. J. Schneider, President; Nathan A. Bowers, Secretary-Treasurer, 502 Rialto Building, San Francisco, Cal.

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 P. M., at the Engineers' Club, 57 Post Street, on the third Tuesday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at noon, every Wednesday, at the Engineers' Club, where special tables are reserved for members and guests of the Association.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

##### (Abstract of Minutes of Meetings)

**February 12th, 1919.**—A special meeting was held at the Engineers' Club to welcome home Maj. John D. Galloway after his year's service in France. After a dinner at which the guests of honor were Maj. Galloway and Maj. Dillman, Maj. Galloway was introduced to about 80 members and guests by Maj. Dillman, who had served with him in France.

Maj. Galloway had been attached to Gen. Pershing's headquarters at Chaumont, with the Intelligence Section. With the use of a set of maps and charts, the preparation of which he had supervised in France, he gave an interesting account of the method of gathering advance information relative to the plans, facilities, and movements of the enemy. He described the transportation systems used by the enemy in battle, outlined the studies for plans of bombing enemy lines of communication and war industrial centers, and concluded with a review of the battles of 1918.

The address was illustrated by a number of lantern slides showing maps of the various battles and views of aeroplanes and of photographs taken from aeroplanes.

Adjourned.

**February 18th, 1919.**—The meeting was called to order at the Engineers' Club at 6 P. M.; President E. J. Schneider in the chair; Nathan A. Bowers, Secretary; and present, also, 65 members and guests.

A letter was read from Chas. Warren Hunt, Secretary of the Society, relative to the work and meetings of the Committee on Development, which was followed by discussion of the subject by Mr. H. L. Haehl, the representative from the District on that Committee.

The Secretary read a communication from the San Francisco Chapter of the American Institute of Architects urging co-operation in the matter of a new building ordinance for San Francisco. After discussion by Messrs. Nishkian and Brunnier, it was voted, on motion, duly seconded, to refer the matter to a committee previously appointed to consider the subject.

The matter of the 1919 dues of members discharged from the service was explained, and returning members were urged to get in touch with the activities of the Association.

The proposed formation of a San Francisco Chapter of the American Association of Engineers was reported.

President Schneider presented the Annual Address in which he reviewed briefly the opportunities before the Association during 1919 and urged the co-operation of individual members. He summarized the points of his address under three classifications, namely, (1) membership; (2) public relations; and (3) entertainment; and suggested that committees be appointed to take charge of the activities under the classifications outlined.

On motion, duly seconded, the President was authorized to appoint such committees, and their members were announced as follows: Membership, Messrs. Brunnier, Bumsted, Legare, Derleth, and Marx; Public Relations, Messrs. Dillman, Markwart, Gilman, Riffle, and Parsons; and Entertainment, Messrs. Muhs, Dewell, and Popert.

On motion, duly seconded, the following resolution was adopted: "That it is the sense of this Association that the American Society of Civil Engineers should be urged to pass a resolution requesting the Congress of the United States to appropriate \$1 000 000 000 for the construction of public roads and other public works, to be apportioned in an equitable manner among the various States, the funds to be administered by a Board of Public Works such as that now being proposed to the Administration by Engineering Council."

The Secretary was instructed to send this resolution to the Secretary of the Society.

The topic for discussion at the meeting was "Concrete Ships." Mr. Leslie W. Comyn, President of Comyn, Mackall and Company, spoke on the "Why" of concrete ships. Mr. Victor H. Poss, who designed the hull of the *Faith*, described the essential features of design and construction of that vessel, illustrating his talk with lantern slides. Mr. H. J. Brunnier, Principal Assistant Engineer, Concrete Ship Division, Emergency Fleet Corporation, explained the work of that organization in detail and, with the aid of slides, took the audience for a visual tour of the five shipyards of the Concrete Ship Division.

Adjourned.

On Saturday afternoon, March 8th, 1919, the members of the Association visited the Government concrete ship yard on the Oakland Estuary at the invitation of Capt. H. D. Hynds, Assoc. M. Am. Soc. C. E. The number who accepted the invitation totaled 125 members and guests who came from points as far away as Merced, Eureka, and Sacramento. The vessels inspected were two 7500-ton tankers, 420 ft. long, on both of which the form work and the placing of the reinforcing steel were practically completed, and the concrete was being poured for one of them.

#### **Colorado Association, Organized 1908.**

L. R. Hinman, President; A. N. Miller, Secretary-Treasurer, 1400 West Colfax Avenue, Denver, Colo.

The meetings of the Colorado Association of Members of the American Society of Civil Engineers (Denver, Colo.) are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesday at 12.30 P. M., at Daniels and Fisher's.

Visiting members are urged to attend the meetings and luncheons.

#### **(Abstract of Minutes of Meeting)**

**March 8th, 1919.**—The meeting was called to order at the Denver Athletic Club; Vice-President E. C. Jansen in the chair; A. N. Miller, Secretary; and present, also, 12 members and 26 guests.

The minutes of the meeting of February 8th, 1919, were read and approved.

The Secretary read a letter from Chas. Warren Hunt, Secretary of the Society, containing a detailed report concerning the selection of the delegates from the Society to the Joint Engineering Congress held in Paris in December, 1918, which letter was a reply to certain resolutions adopted by the Duluth Association.

Mr. F. A. Banks addressed the meeting on "The Jackson Lake Dam, Wyoming", illustrating his remarks with lantern slides.

Adjourned.

#### **Atlanta Association, Organized 1912.**

T. P. Branch, President; J. T. Wardlaw, Secretary-Treasurer, 1530 Healey Bldg., Atlanta, Ga.

Informal luncheons are held for members of the Association on the last Monday of each month, at 12.30 P. M. The place is not fixed, but this information will be furnished on application to the Secretary.

#### **Baltimore Association, Organized 1914.**

H. G. Perring, President; Charles J. Tilden, Secretary-Treasurer, The Johns Hopkins University, Baltimore, Md.

**Cleveland Association, Organized 1914.**

F. D. Richards, President; George H. Tinker, Secretary-Treasurer, 516 Columbia Building, Cleveland, Ohio.

**Detroit Association, Organized 1916.**

T. A. Leisen, President; Clarence W. Hubbell, Secretary, 2348 Penobscot Building, Detroit, Mich.

The regular meetings of the Association are held on the second Friday of December, April, and October, the last being the Annual Meeting.

**District of Columbia Association, Organized 1916.**

A. P. Davis, President; John C. Hoyt, Secretary-Treasurer, U. S. Geological Survey, Washington, D. C.

**Duluth Association, Organized 1917.**

W. B. Patton, President; Walter G. Zimmermann, Secretary, Wolvin Building, Duluth, Minn.

The regular meetings of the Association are held at noon on the third Monday of each month (usually at the Kitchi Gammi Club), with luncheon, followed by a short business session and the reading of papers. Visiting members of the American Society of Civil Engineers can secure from the Secretary definite information relative to the meetings, at which they will be welcomed. The Annual Meeting is held on the third Monday in May.

**(Abstract of Minutes of Meeting)**

**April 21st, 1919.**—The meeting was called to order at the Kitchi Gammi Club; President W. B. Patton in the chair; Walter G. Zimmermann, Secretary; and present, also, 16 members and 1 guest.

The minutes of the meeting of March 24th, 1919, were read and approved.

The Secretary presented a communication from Secretary Hunt relative to the selection of members from each Local Association to assist the Publication Committee in determining the value of papers received by the Society. On motion, duly seconded, this matter was referred to the Local Board of Directors.

Letters were also read from Messrs. Henry R. Buck, of Hartford, Conn., and G. M. Braune, of Cincinnati, Ohio, relative to the proper procedure for the formation of Local Associations.

On motion, duly seconded, it was ordered, that all members of the Association be assessed one dollar in order to replenish the treasury.

Mr. Hoyt reported for the Committee appointed to investigate the matter of the establishment of a working fund for Engineering Council, that provision had been made for such fund and that the Committee would report further on the matter at the next meeting of the Association.

Mr. Pickles reported briefly in regard to the Annual Convention of the Society, and requested that a new member of the Local Committee be appointed to take the place of Mr. E. R. Lewis resigned. President Patton subsequently appointed Col. Francis A. Pope as a member of the Committee.



On motion, duly seconded, the Secretary was ordered to extend formal invitations to the Duluth Engineers' Club and the Engineers' Club of Northern Minnesota to assist the Association in looking after and entertaining members of the Society in attendance at the Annual Convention.

Mr. Clark reported for the Local Committee on Development relative to the action taken by the Cleveland Association in regard to the terms of office of the officers of the Development Committee of the Society, which report stated that although the Association was in sympathy with the Cleveland Association in this matter, no action should be taken at this time in view of the fact that another meeting of the Development Committee would be held in the near future. On motion, duly seconded, the report was accepted, and the Secretary instructed to write to the Cleveland Association to that effect.

Mr. Ash presented a progress report of the Library Committee and requested that the Committee be continued, which request, on motion, duly seconded, was granted.

Mr. Clark reported for the Entertainment Committee that arrangements were being made with Mr. Newton, of Milwaukee, Wis., to address the Association on the work of the Fabricated Ship Corporation of Milwaukee, at the Annual Meeting in May.

A progress report was presented by Mr. Clapper for the Committee on Licensing of Engineers, and, on motion, duly seconded, the Committee was continued.

A Special Committee consisting of Messrs. Taylor, Clapper, and Coe, presented a discussion of the paper entitled, "Hydrated Lime and Its Use in Concrete", by Mr. W. E. Hawley. On motion, duly seconded, the discussion was ordered printed and distributed to the membership.

The meeting was addressed by Maj. Coe, who supplemented Col. Pope's talk at the meeting of March 24th, 1919, by giving facts and figures pertaining to the results accomplished by the engineers in war service. Maj. Coe also related some of his personal experiences while in the service in France.

Adjourned.

#### **Illinois Association, Organized 1916.**

H. J. Burt, President; Edgar S. Nethercut, Secretary-Treasurer, 1735 Monadnock Blk., Chicago, Ill.

The regular meetings of the Association are held on the second Monday of March, June, September, and December, the last being the Annual Meeting. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

#### **Louisiana Association, Organized 1914.**

Arsène Perrilliat, President; Eugene F. Delery, Secretary, 503 City Hall Annex, New Orleans, La.

The regular meetings of the Association are held at The Cabildo, New Orleans, La., on the first Monday of January, April, July, and October.

**Nebraska Association, Organized 1917.**

\*\_\_\_\_\_, President; Homer V. Knouse, Secretary-Treasurer, 200 City Hall, Omaha, Nebr.

Regular meetings of the Association are held on the first Saturday of each month, except July and August, and at such places as may be appointed from time to time by the Executive Committee. The Annual Meeting is held in Lincoln, Nebr., on the second Friday in January.

Visiting members of the Society are especially urged to communicate with the Secretary when in the city.

**Northwestern Association, Organized 1914.**

Ralph D. Thomas, President; W. N. Jones, Secretary, City Engineer's Office, City Hall, Minneapolis, Minn.

The meetings of the Association are held bi-monthly, alternating between St. Paul and Minneapolis, on the third Friday of each month. Information as to the time and place of such meetings will be furnished on application to the Secretary.

**Philadelphia Association, Organized 1913.**

F. Herbert Snow, President; Henry T. Shelley, Secretary, 416 City Hall, Philadelphia, Pa.

The regular meetings of the Association are held at the Engineers' Club of Philadelphia, 1317 Spruce Street, on the first Monday in January, April, and October, the last being the Annual Meeting.

**Pittsburgh Association, Organized 1917.**

Robert A. Cummings, President; Nathan Schein, Secretary-Treasurer, 1510 Carson Street, Pittsburgh, Pa.

The Annual Meeting of the Association is held on the first Monday in October. The time and place of other meetings are not fixed, but this information will be furnished on application to the Secretary.

**Portland, Ore., Association, Organized 1913.**

E. Burslem Thomson, President; C. P. Keyser, Secretary, 318 City Hall, Portland, Ore.

The Annual Meeting of the Association is held on the second Friday in January. Other meetings are called by the President and are usually convened on Friday evenings. The place is not fixed, but this information may be obtained on application to the Secretary. All members of the American Society of Civil Engineers are cordially invited to attend the meetings.

**(Abstract of Minutes of Meetings)**

**February 10th, 1919.**—The meeting was called to order at the University Club; President E. B. Thomson in the chair; C. P. Keyser, Secretary; and present, also, 21 members.

Mr. G. M. Post, representing the Local Chapter of the American Institute of Architects, addressed the meeting in favor of Senate Bill No. 180, relating to the licensing of architects in the State of Oregon.

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\* Mr. Adna Dobson, the President of the Association, died on May 4th, 1919.

Mr. A. N. Haley also addressed the meeting urging the appointment of a Mr. Blackwell, of Seattle, on the commission to investigate the settlement of the St. John's grain elevator.

The minutes of the meeting of January 17th, 1919, were read and approved.

The Committee on City Planning, having completed its work, and its Chairman, Mr. J. P. Newell, having been elected President of the City Planning Commission, on motion, duly seconded, was discharged.

The Secretary read a communication from G. B. Hegardt, Chief Engineer of the Dock Commission, asking the Association to appoint a board of engineers to investigate the settlement of the St. John's grain elevator. On motion, duly seconded, the President was instructed to name ten engineers, recommending the selection of not less than three, but preferably five, to act as a board to pass on the question of subsidence.

On motion, duly seconded, a communication from the St. Louis Association recommending the assessment of one dollar per member to carry on the work of the National Service Committee of Engineering Council, at Washington, D. C., was laid on the table.

A communication from the Duluth Association asking for exchange of all resolutions of general interest was read, and, on motion, duly seconded, was ordered to be filed.

The meeting was then opened to a general discussion of the pending legislation affecting engineers. After a statement by the Secretary that he had failed to get copies of the bills mailed to the members of the Association, it was suggested that some member in favor of House Bill No. 263 (proposing the registration of professional engineers), address the meeting on the benefits to be derived by the Engineering Profession and by the public through this bill. Messrs. Laurgaard and Stanley spoke briefly in favor of the bill and Messrs. Dieck and Henny against it. It was then moved and seconded that the Association appoint a committee to take the necessary steps to defeat House Bill No. 263 and Senate Bill No. 180.

After discussion by Messrs. Stevens, Dieck, Stanley, Laurgaard, Cunningham, Hoffmark and Mieth, it was moved and seconded that the Secretary send out letter ballots on House Bill No. 263 to all members of the Society residing in Oregon, but the amendment was lost. The original motion was then put and carried, and President Thomson appointed Messrs. Mason and Henny as the committee.

On motion, duly seconded, it was decided that the Association take no action on Senate Bill No. 46 (County Surveyor and Roadmaster legislation).

Adjourned.

**April 4th, 1919.**—The meeting was called to order at 8 p. m., at the University Club; President Thomson in the chair; C. P. Keyser, Secretary; and present, also, 16 members.

The minutes of the meeting of March 20th, 1919, were read and approved.

A report was read from the Committee appointed to consider memberships in the Oregon State Chamber of Commerce and the American

Association for the Advancement of Science, which recommended that the Association decline both invitations. On motion, duly seconded, the report was adopted and the Committee discharged.

A progress report was presented by the Committee on the preparation of a questionnaire of personal record, and it was stated that a final report would be presented within two weeks.

Mr. M. E. Reed reported verbally on Mr. B. C. Ball's dinner to Calvin M. Rice, Secretary of the American Society of Mechanical Engineers, on March 25th, 1919, at which the officers of the Association were invited guests. It was stated that a conference of the Presidents of the various local technical bodies would be called, with a view to organizing a general local engineering association, or, perhaps, combining with the Oregon Society of Engineers. Nathan A. Bowers, Secretary of the San Francisco Association, also reported on Mr. Rice's reception in Seattle and British Columbia.

Mr. D. C. Henny addressed the meeting on "Some Features of Reclamation of the Florida Everglades", which was followed by informal discussion. On motion, duly seconded, Mr. Henny was accorded the thanks of the Association for his address.

It was moved and seconded that the Secretary be instructed to send a copy of the minutes of the meeting of the Association of February 10th, 1919, to the Secretary of the Society with the request that he have printed in *Proceedings* as much as pertains to the action of the Association relative to House Bill No. 263, and, further, to ask who furnished the information relative thereto which appears on page 304 of March, 1919, *Proceedings*. It was then moved that the motion be amended directing the Secretary to suggest to Dr. Hunt that he publish only such actions of the Association as are reported by its Secretary or other accredited source of information, which motion was carried.

On motion, duly seconded, it was decided that the Association go on record as favoring a Department of Public Works in the administration of the National Government and to further the movement by all means.

Adjourned.

**St. Louis Association, Organized 1888 (Constitution Approved by Board, 1914).**

J. A. Ockerson, President; C. W. S. Sammelman, Secretary-Treasurer, 300 City Hall, St. Louis, Mo.

The Annual Meeting of the Association, for the election of officers and for the transaction of business, is held on the fourth Monday in November. Two meetings each year, for the presentation and discussion of technical papers, are held in the Auditorium of the Engineers Club of St. Louis and are open to members of the Associated Societies. Other "get-together" meetings are held regularly for dinner or luncheon on the fourth Monday of each month except July, August, and November.

**San Diego Association, Organized 1915.**

W. C. Earle, President; Ralph Wueste, Secretary-Treasurer, Bonita, Cal.

**Seattle Association, Organized 1913.**

L. M. Grant, President; Phil A. Franklin, Secretary, 1409 East 65th St., Seattle, Wash.

The regular meetings of the Association, with luncheon, are held at the Engineers' Club, Arctic Building, Third Avenue and Cherry Street, at 12.15 p. m., on the last Monday of each month.

Special evening meetings are held from time to time for the purpose of discussing important topics, and information concerning these meetings may be had by addressing the Secretary. All members in any grade of the American Society of Civil Engineers are cordially invited to attend the meetings when in the vicinity, and, if located in this District for any length of time, their membership in the Association will be appreciated.

**Southern California Association, Organized 1914.**

George G. Anderson, President; Floyd G. Dessery, Secretary, 511 Central Building, Los Angeles, Cal.

The Southern California Association of Members of the American Society of Civil Engineers (Los Angeles, Cal.) holds regular monthly meetings on the second Wednesday of each month, the December meeting being the Annual Meeting.

Informal luncheons in connection with the Joint Technical Societies of Los Angeles are held at 12.15 p. m. every Thursday at the Broadway Department Store Café.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in Los Angeles, and any such member will be gladly welcomed as a guest at any of the meetings or luncheons.

**(Abstract of Minutes of Meeting)**

**April 9th, 1919.**—The meeting was called to order at 6.30 p. m., at Christopher's Café; President Anderson in the chair; F. G. Dessery, Secretary; and present, also, 35 members and 16 guests.

F. E. Trask, Chairman of the Committee on Reconstruction and Development, presented a detailed progress report on the work of this Committee.

President Anderson and Mr. W. K. Barnard reported that as a result of a conference, at San Francisco, with representatives of the various technical societies of Northern California, on the registration of engineers in California, an agreement had been made by all participants to withdraw their support of Senate Bill No. 559, entitled "An Act to Register Engineers in the State of California", and to unify all efforts and work for legislation to be presented to the State Legislature at its 1921 session.

F. D. Howell, Chairman of the Committee on Publicity, reported in detail on the subject, outlining efforts and suggestions of engineers to secure proper publicity in engineering matters.

Robert A. Cummings, of Pittsburgh, Pa., Chairman of the Special Committee on the Bearing Value of Soils for Foundations, etc., of the Society, addressed the meeting on the work of his Committee, and requested members of the Association to aid in its work by submitting information on the Physics of Soils.



Mr. Frederick C. Noble, of New York City, member of the Committee on Development of the Society, also addressed the meeting relative to the work of that Committee.

The chief topic for discussion before the meeting was the subject of Flood Control as outlined by the Programme Committee. A paper by Dr. Ford A. Carpenter, U. S. Meteorologist, on "Precipitation in Southern California Illustrated by Storms in Recent Years in Los Angeles County", was presented by the author and illustrated with lantern slides. The second paper entitled, "Flood Run-Off", was read by Mr. F. C. Ebert, Hydrographer of the U. S. Geological Survey. A general discussion of the subject followed the reading of the papers.

On motion, duly seconded, it was decided to present a resolution looking to the furtherance of the efforts of the Weather Bureau and the Hydrographic Branch of the U. S. Geological Survey, by securing greater financial aid and pledging the help of the Association along this line.

Adjourned.

#### **Spokane Association, Organized 1914.**

Peter Mogensen, President; Charles E. Davis, Secretary, City Engineer's Office, Spokane, Wash.

The regular meetings of the Association are held on the second Friday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary.

Visiting members are invited to attend the meetings.

#### **Texas Association, Organized 1913.**

R. J. Potts, President; J. H. Brillhart, Secretary, Care, Mosher Mfg. Co., Dallas, Tex.

#### **Utah Association, Organized 1916.**

A. B. Villadsen, President, 304 Dooly Bldg., Salt Lake City, Utah.

The Annual Meeting of the Association is held on the first Wednesday in April. The time of other meetings is not fixed, but this information will be furnished on application to the President.

### **PRIVILEGES OF ENGINEERING SOCIETIES EXTENDED TO MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS**

Members of the American Society of Civil Engineers will be welcome in the Reading Rooms and at the meetings of many engineering societies in all parts of the world. A list of such societies will be found on pages 41 and 42 of the Year Book of the Society for 1919.

**NEW BOOKS\***

(From April 1st to April 30th, 1919)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

**DONATIONS TO ENGINEERING SOCIETIES LIBRARY****PRINCIPLES OF RADIOTELEGRAPHY.**

Prepared in the Extension Division of the University of Wisconsin by Cyril M. Jansky. (Engineering Education Series.) N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 242 pp., 179 illus., 9 x 6 in., cloth. \$2.00.

A textbook in which the use of mathematical expressions is limited, while an attempt has been made to explain the principles involved so fully that a reader unable to follow the mathematical demonstrations may still acquire some understanding of the subject. A considerable portion of the book is devoted to a discussion of electromagnetic theory and apparatus, in order that the student may acquire an intelligent idea of the principles of the operation of radiotelegraphic apparatus.

**PUNCHES AND DIES:**

Layout, Construction, and Use. By Frank A. Stanley. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 434 pp., 618 illus., 9 x 6 in., cloth. \$4.00.

This book has been written to provide die-makers, tool-makers and tool draftsmen with certain definite information heretofore not available as a whole. Almost 90% of the material, the author states, has not been published before.

**AEROPLANE CONSTRUCTION AND ASSEMBLY.**

By J. T. King and N. W. Leslie. Minneapolis, Press of the William Hood Dunwoody Industrial Institute. 115 pp., 77 illus., 5 pl., 9 x 6 in., cloth. \$1.50.

This work is intended as a practical manual for mechanics engaged in constructing and rigging airplanes and as a guide to instructors. Airplane assembly, construction, and materials, and the theory of flight are discussed.

**IRON AND STEEL:**

(A Pocket Encyclopedia), Including Allied Industries and Sciences. By Hugh P. Tiemann. With an Introduction by Henry Marion Howe. 2d edition. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 514 pp., 7 x 4 in., flexible cloth. \$4.00.

In a volume of pocket size, the author provides a combination of dictionary, encyclopedia, and handbook of the iron and steel industries, intended for the metallurgist. The number of terms, and the text also, have been increased about one-half, the chief additions being more extended discussions of heat treatment, physical properties and testing, and of metallographic subjects.

**PHYSICS AND CHEMISTRY OF MINE VENTILATION:**

A Practical Handbook for Vocational Schools, and for Those Qualifying for Mine Foreman and Mine Inspector Certificates. By Joseph J. Walsh. 2d edition. N. Y., D. Van Nostrand Co., 1918. 219 pp., illus., tables, 8 x 5 in., cloth. \$2.00.

A textbook of theory and practice for students with limited mathematical knowledge. This edition has been thoroughly revised, and a chapter on the sampling and analysis of mine gases has been added.

\*Unless otherwise specified, books in this list have been donated by the publishers.

**MINING PRACTICES.**

Compiled from the *Engineering and Mining Journal* by the Editorial Staff. N. Y., McGraw-Hill Book Co., Inc., Sole Selling Agents, 1919. 105 pp., 56 illus., 11 tables, 12 x 9 in., cloth. \$1.50.

These articles have been selected to illustrate the range in conditions that must be met in mining operations and to indicate in both a general and a specific way how mining practices are developing.

**THE MINERAL DEPOSITS OF SOUTH AMERICA.**

By Benjamin L. Miller and Joseph T. Singewald. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 598 pp., illus., maps, 9 x 6 in., cloth. \$5.00.

An account of the economic geology of the countries of South America, based on an extended visit by the authors in 1915, and a study of the literature. It forms a digest of the available information on the mineral deposits of the continent. Selected bibliographies are appended to each chapter, and an adequate index is provided.

**QUANTITATIVE ANALYSIS.**

By Edward G. Mahin. 2d edition. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 605 pp., 122 illus., tables, 8 x 5 in., cloth. \$3.50.

The author has endeavored to produce a volume which would occupy a position between the complete reference work and the bare outline of laboratory exercises. It covers the material that he wishes to take up in his college courses, and, at the same time, presents a theoretical and practical discussion of the subject. In addition to the presentation of the general subject, a section on the analysis of industrial products and raw materials is included. This edition has been carefully revised and partly rewritten, and new material has been added.

**INDUSTRIAL GOODWILL.**

By John R. Commons. N. Y., McGraw-Hill Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 213 pp., 3 charts, 8 x 6 in., cloth. \$2.00.

The author discusses the present-day problems of labor and capital, their relations to each other, and the methods of solving them, which have been practiced or proposed. Contents: Commodity; Machinery; Goodwill; The Public; Democracy; Solidarity; Theory and Practice; Security; Labor Market; Insurance; Health; The Shop; Education; Loyalty; Personality; Depression; The World.

**OFFICE MANAGEMENT:**

Its Principles and Practice Covering Organization, Arrangement, and Operation, with Special Consideration of the Employment, Training, and Payment of Office Workers. By Lee Galloway. 2d printing. N. Y., The Ronald Press Co., 1919. 701 pp., 97 illus., 1 pl., 9 x 6 in., flexible leather. \$6.00.

This book is intended as an exposition of the basic principles of office administration in its widest sense, with adequate illustration by examples of successful practice.

**OFFICE ADMINISTRATION.**

By J. William Schulze. 1st edition, 2d impression. N. Y., McGraw-Hill Book Co., Inc.; Lond., Hill Publishing Co., Ltd., 1919. 295 pp., illus., folded chart, 8 x 5 in., cloth. \$3.00.

Written to present a thorough discussion of the principles and methods which underlie efficient and economical management, for use by executives and students of business, it embodies the author's added experience and observation, and is intended to replace his earlier book, "The American Office".

**SEWAGE DISPOSAL.**

By Leonard P. Kinnicutt, C. E. A. Winslow, and R. Winthrop Pratt. 2d edition, rewritten. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 547 pp., 141 illus., 136 tables, 9 x 6 in., cloth. \$4.00.

This volume offers a general survey of the problem from the various viewpoints of the chemist, the sanitary biologist, and the engineer, with particular reference to the conditions of American practice. The aim has been to discuss rather fully the fundamental principles of chemistry and bacteriology which are involved and to include the more important aspects of the engineering works designed to carry them into operation. This edition has been completely rewritten so as to bring in new data and recent viewpoints on all the topics treated. Several chapters have been much enlarged, and several new ones have been added.

**DONATIONS TO THE READING ROOM****MAN TO MAN:**

The Story of Industrial Democracy. By John Leitch. N. Y., B. C. Forbes Company (copyright, 1919). 249 pp., 8 x 5 in., cloth. \$2.00.

In order to call the attention of both employer and employee to the importance of establishing a happier understanding between management and men in the industrial world, the author has set down in this book something of his theory and a few of the cases arising out of his conception of Industrial Democracy.

**WATERPROOFING ENGINEERING**

For Engineers, Architects, Builders, Roofers and Waterproofers. By Joseph Ross. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 10 + 442 pp., 104 illus., 41 tab., 9 x 6 in., cloth. \$5.00.

The preface states that in writing this book an effort has been made to explain past and present methods and materials of water-proofing, investigate their efficiency, draw helpful conclusions, and, where possible, establish standard methods and materials for general waterproofing, and emphasize the value of careful study of the whole subject, especially by engineers engaged in design. The Contents are: Need and Function of Waterproofing; Systems of Waterproofing; Impervious Roofing; Waterproofing Expansion Joints in Masonry; Waterproofing Materials; Waterproofing Implements and Machinery; Technical and Practical Tests on Waterproofing; Waterproofing Specifications; Practical Recipes and Special Formulas; Waterproofing Applied; Cost Data on Materials, Improvements, and Labor; Practical Tables; Appendix I, Explanation of Mechanical Analysis for Grading Concrete Aggregates; Appendix II, Concrete in Sea Water; Appendix III, Report on Waterproofing—American Society for Testing Materials; Appendix IV, Glossary of Terms Used in the Waterproofing Industry; Appendix V, References; Index.

**THE BUILDING ESTIMATOR'S REFERENCE BOOK:**

A Practical and Thoroughly Reliable Book for Contractors and Estimators Engaged in Estimating the Cost of and Constructing All Classes of Modern Buildings; Giving the Actual Labor Costs and Methods Employed in the Erection of Some of Our Present Day Structures, Together with All Necessary Material and Labor Quantities Entering Into the Cost of All Classes of Buildings. By Frank R. Walker. 3d edition. Chic., Frank R. Walker Company, 1919. 7 + 2831 pp., illus., diag., tab., 7 x 5 in., morocco. (Gift of the Author.)

The aim of this book is to furnish building contractors, estimators, engineers, architects, etc., with correct methods of estimating the detailed costs of buildings and other construction work. This edition has been thoroughly revised, and the data are arranged so that local prices and wages can be inserted in all instances, resulting in unit costs, that are thoroughly dependable. It is also the author's intention to issue monthly supplements giving additional estimating data, together with the current prices of the basic materials in the principal markets and trade centers, in order to cover fluctuating prices.

## IRRIGATION ENGINEERING.

By Arthur Powell Davis and Herbert M. Wilson. 7th ed., rev. and enl. N. Y., John Wiley & Sons, Inc.; Lond., Chapman & Hall, Ltd., 1919. 23 + 640 pp., 250 illus., 59 tab., 9 x 6 in., cloth. \$4.50.

In re-writing and re-arranging the subject-matter for this edition of this work which is devoted largely to American irrigation practice, much that is new, the preface states, has been added. The radical changes are stated to be the treatment of soils, plant food, operation and maintenance, and other lines of work in which the duties of the irrigation engineer come in contact with those of the irrigator, such as the preparation of land, the duty of water, and its application to the land. At the end of nearly every chapter there is a bibliography relating to the subject discussed in that chapter, and, in closing, the authors have devoted a chapter to standard specifications for some of the most important work required in irrigation construction, including those for the Arrowrock Dam.



## MEMBERSHIP

(From April 4th to May 8th, 1919.)

ADDITIONS		MEMBERS		Date of Membership.	
AYERS, AUGUSTINE HAINES.	Care, U. S. Re-	clamation Service, Powell, Wyo.....	Assoc. M	Oct. 3, 1911	
			M.	April 14, 1919	
BARTOCCINI, ASTOLFO.	Gen. Contr. (Sawyers	& Bartoccini), 59 Fifth Ave., New York	Assoc. M.	May 6, 1903	
	City.....		M.	April 14, 1919	
CAIRNS, GEORGE HOLLOWAY.	City Engr. and Commr. of	Streets; Cons. Engr., Gainesville, Fla.....		Jan. 13, 1919	
CLOW, PERCIVAL.	Structural Engr., Westinghouse, Church,	Kerr & Co., Inc., 37 Wall St., Room 900, New York			
	City .....			April 14, 1919	
CORKRAN, WILBUR SHERMAN.	Maj., Engrs.,	U. S. A., E. O. T. S., Camp A. A.	Assoc. M.	Mar. 13, 1917	
	Humphreys, Va.; Address, Crisfield, Md.		M.	April 14, 1919.	
DELANO, EDWARD WARREN.	Engr. of Railroad Constr.,	Central Constr. Corporation, 1661 Darley Ave.,			
	Baltimore, Md.....			April 14, 1919	
EMERSON, GEORGE DANA.	162 Walnut St.,	Brookline, Mass.....	Assoc. M.	June 3, 1908	
			M.	April 14, 1919	
EVERETT, MARTIN RYERSON.	Pres., Martin R. Everett,	Inc., 275 Emmett St., Newark, N. J.....		April 14, 1919	
FLEMING, JOSEPH HAMILTON.	Designing and	Cons. Civ. Engr. (Braun, Fleming,	Assoc. M.	Sept. 11, 1917	
	Knollman & Prior), 233 South High	St., Columbus, Ohio.....	M.	April 14, 1919	
FREEMAN, RALPH.	Managing Partner (Sir Douglas Fox	& Partners), 56 Moorgate St., London, E. C. 2,			
	England .....			Mar. 11, 1919	
GOODMAN, CHARLES.	Gen. Contr. (Heyman	& Goodman Co.), 875 West 180th St.,	Assoc. M.	June 3, 1915	
	New York City.....		M.	April 14, 1919	
HARMAN, JOHN JAMES.	Civ. Engr., Walworth	Mfg. Co., Boston, Mass.....		April 14, 1919	
HUNT, HORACE SINCLAIR.	(Fargo Eng. Co.),	201 McBride St., Jackson, Mich.....	Assoc. M.	Oct. 7, 1914	
			M.	April 14, 1919	
KALLASCH, WINFRED MILLER.	Gen. Supt.,	Leonard Eng. Co., 860 McCormick Bldg.,	Assoc. M.	May 6, 1914	
	Chicago, Ill.....		M.	Mar. 11, 1919	
KINSEY, WILLIAM AMBROSE.	Cons. and Contr.	Engr., 192 Market St., Newark, N. J....	Assoc. M.	May 31, 1910	
			M.	April 14, 1919	
MCCLINTOCK, HALLETT EDWARD.	Asst. City	Engr., 1810 Manderson St., Omaha, Nebr. }	Assoc. M.	Dec. 6, 1915	
			M.	April 14, 1919	

MEMBERS (Continued)		Date of Membership.	
McCOMB, DANA QUICK. Maj., Engrs., U. S. A.;	Engr. Officer in Local Chg. of Heavy	Assoc. M.	Dec. 6, 1915
	Fortification and Land Defense Constr.,	M.	Jan. 14, 1919
	Corregidor, Philippine Islands.....		
MORRISON, CHRISTOPHER GEORGE. Dist. Engr.,	Alaska Road Comm., P. O. Box T,	Jun.	Oct. 5, 1909
	Juneau, Alaska.....	Assoc. M.	Mar. 1, 1913
		M.	Mar. 11, 1919
NORTHAM, MANLEY PEROE. Efficiency Engr.,	The Emerson Engrs., Care, The Alumi-	Assoc. M.	Oct. 29, 1912
	num Co. of America, Massena, N. Y...	M.	April 14, 1919
PERRY, ARTHUR IRVING. Commander, U. S. N. R. F., Com-			
manding U. S. S. <i>Gloucester</i> , and Harbor Entrance			
Patrol Forces, 3d Naval Dist., 831 Lincoln Pl.,			
Brooklyn, N. Y.....			April 14, 1919
PUFF, CHARLES FREDERICK, JR. Asst. Chf.	Engr., Bureau of Highways, 5125 West	Assoc. M.	April 1, 1914
	15th St., Philadelphia, Pa.....	M.	April 14, 1919
REYNOLDS, WILLIAM LEROY. Chf. Engr.,	Water, Sewers, and Gas, U. S. Explo-	Assoc. M.	Feb. 4, 1914
	sives Plant C, Nitro, W. Va.....	M.	April 14, 1919
SMALL, JAMES HAMPDEN, JR. Const. Q. M.,	Richmond Bag Loading Plant, Rich-	Jun.	Mar. 31, 1903
	mond, Va.....	Assoc. M.	July 9, 1912
		M.	April 14, 1919
SWAREN, JOHN WILLIAM. Maj., Engrs., U. S. A.;	Secy., Engr. Training Schools, Camp	Assoc. M.	June 11, 1917
	A. A. Humphreys, Va.....	M.	April 14, 1919
VAWTER, JOHN TERRELL. Maj., Engrs., U. S. A.; Asst.			
Chf. Engr., Emergency Fleet Corporation, 369 Pine			
St., San Francisco, Cal.....			Mar. 11, 1919
WAGNER, EDWARD LAWRENCE. 320 Fifth Ave., New York			
City.....			April 14, 1919
WEBSTER, ROYAL SYLVESTER. Asst. Chf. Engr.	and Asst. Engr., Way and Works, Ha-	Jun.	Oct. 6, 1903
	vana Cent. R. R., Apartado 970, Havana,	Assoc. M.	Feb. 4, 1913
	Cuba.....	M.	April 14, 1919
WONDERS, JAMES CREW. Dist. Engr., 5th Dist., U. S.			
Office of Public Roads, Omaha, Nebr.....			April 14, 1919
WOODWARD, ROLAND. P. O. Box 941, Columbus, Ga.....			Mar. 11, 1919

## ASSOCIATE MEMBERS

ABEL, ARTHUR HENRY. Asst. Engr., Comm. of Public			
Docks, Foot of Stark St., Portland, Ore.....			April 14, 1919
BAILEY, WILLIAM CARLYLE. Asst. Engr., Bureau of High-			
ways, Dept. of Public Works, City of Philadelphia,			
1223 Wakeling St., Frankford, Philadelphia, Pa....			Nov. 26, 1918

ASSOCIATE MEMBERS (*Continued*)Date of  
Membership.

BLAKESLEE, HAROLD LAW. Contr.'s Engr., C. W. Blakeslee & Sons, 58 Waverly St. (Res., 598 George St.), New Haven, Conn.....	} Jun. Assoc. M.	Dec. 5, 1911 April 14, 1919
BROOKS, RAYMOND WENTWORTH. Asst. Field Engr., Roadway Party 9, Interstate Commerce Comm.; Interstate Bldg., Kansas City, Mo.....	} Jun. Assoc. M.	Jan. 2, 1912 Mar. 11, 1919
BROWN, EUGENE BAKER. Res. Engr., California Highway Comm., Gaviota, Cal.....		April 14, 1919
BROWN, JESSE FRED. 507 Interstate Bldg., Kansas City, Mo.		April 14, 1919
BROWNE, WOLSTAN ELLIOT. 228 Washington St., Abing- ton, Mass. ....		April 14, 1919
CHANDLER, EMERSON LAWRENCE. Asst. Div. Engr., The Miami Conservancy Dist., Dayton, Ohio.....	} Jun. Assoc. M.	Nov. 8, 1909 Mar. 11, 1919
COLLINS, JOHN LAMBERT. Engr. with Stone & Webster, 29 Market St., Lowell, Mass.....		Mar. 11, 1919
CRANE, JACOB LESLIE, JR. Prin. Asst. Engr., Gannett, Seelye & Fleming, 204 Locust St., Harrisburg, Pa.....	} Jun. Assoc. M.	Dec. 3, 1913 April 14, 1919
ELSTON, ALLAN VAUGHN. Cons. Engr. (Wood, Elston & Witten), 209 Lynch Bldg., Tulsa, Okla.....		April 14, 1919
FITZGERALD, WILLIAM EDWARD. Supt., New Brunswick Filtration Plant, 12 Strat- ford Pl., New Brunswick, N. J.....	} Jun. Assoc. M.	May 31, 1916 April 14, 1919
GRAETER, GEORGE CHRISTIAN. Capt., Engrs., U. S. A., Ser- vice of Light Rys., U. S. A. P. O. 703, Am. Exp. Forces, Abainville, Meuse, France; Address, 28 North State St., Sullivan, Ind.....		Oct. 9, 1917
GRANNIS, JAMES KIDWELL. 724 Lindsay Bldg., Dayton, Ohio.....	} Jun. Assoc. M.	Sept. 6, 1910 April 14, 1919
HULL, WILLIAM DELONEY. 119 Chestnut St., Dansville, Va.		Mar. 11, 1919
JACOBS, NATHAN BERND. Treas., Morris Knowles, Inc., 1200 Jones Bldg., Pitts- burgh, Pa.....	} Jun. Assoc. M.	Sept. 11, 1917 April 14, 1919
LABOON, JOHN FRANCIS. (Chester & Fleming), 1111 Union Bank Bldg., Pittsburgh, Pa.....		April 14, 1919
LANE, EMORY WILSON. Computer, Miami Conservancy Dist., Dayton, Ohio.....	} Jun. Assoc. M.	Mar. 4, 1914 April 14, 1919
LATENSER, JOHN, JR. Archt. (John Latenser & Sons), 632 Bee Bldg., Omaha, Nebr.....		April 14, 1919
LINDLEY, EDWARD SEARLES. Executive Engr., Indian Public Works Dept., Punjab Irrig. Branch, Care, Thomas Cook & Son, Bombay, India.....		Mar. 11, 1919
LUCEY, JOHN. Acting Dist. Engr., Northern Dist., Obras Publicas, Santiago, Dominican Republic.....		Jan. 13, 1919

ASSOCIATE MEMBERS (Continued)		Date of Membership.	
McKEAN, HARRY PARKER. Asst. Engr., The Mountain States Telephone & Telegraph Co., 417 Wyoming Bldg., Denver, Colo.....	} Jun. Assoc. M.	June 6, 1911	Nov. 26, 1918
MORRIS, SAMUEL BROOKS. Chf. Engr., Pasadena Water Dept., City Hall, Pasadena, Cal.....		Mar. 2, 1915	April 14, 1919
MOULTON, ARTHUR GARLAND. Supt., Thompson-Starrett Co., 175 West Jackson Boulevard, Room 539 (Res., 5048 Woodlawn Ave.), Chicago, Ill.....			April 14, 1919
NEVIUS, SEARLE BROWN. Insp. of Hulls and Machinery, and Estimator, U. S. Shipping Board, Emergency Fleet Corporation, 170 Perry St., Oakland, Cal.....	} Jun. Assoc. M.	Oct. 1, 1912	Mar. 11, 1919
NICHOLS, THOMAS FLINT. 419 Fleming Bldg., Phoenix, Ariz.....			April 14, 1919
PAULI, WALTER CHRISTIAN. Asst. Engr., Ill. Cent. R. R., Valuation Dept., 6528 Greenwood Ave., Chicago, Ill.			April 14, 1919
ROOT, WILLIAM FRANCIS STANTON. Capt., Engrs., U. S. A., Care, Section Engr., Base Section No. 1, Am. Exp. Forces, St. Nazaire, France; Address, 50 West 2d St., Mount Vernon, N. Y.....			Jan. 13, 1919
ROSE, JOHN GANSOVERTTE. Asst. Engr., Lyman E. Bishop, 2615 Argyle Pl., Denver, Colo.....			April 14, 1919
SAWIN, SANFORD WALES. Marshallton, Del.....			Mar. 11, 1919
SCRUGGS, EDWIN LYLE. 902 Realty Bldg., Charlotte, N. C..			April 14, 1919
SHEETS, FRANK THOMAS. Bridge Engr., State Div. of Highways, Springfield, Ill.....			April 14, 1919
SIEBERT, CHRISTIAN LUDEWIG. Capt., San. C., U. S. A.; Camp San. Engr., Camp Dix, N. J.....			April 14, 1919
SIGMUND, BENJAMIN JOSEPH. Dist. Representative, Truscon Steel Co., 810 Commonwealth Bldg., Philadelphia, Pa.....			April 14, 1919
SMITH, ERWIN WEIR. Asst. Technological Supt., The Roxana Petroleum Co., Drawer 82, Mineral Wells, Tex.....			Jan. 13, 1919
SMITH, RICHARD BENNETT. 59 Selden Ave., West, Detroit, Mich.....	} Jun. Assoc. M.	Jan. 6, 1915	Oct. 8, 1918
STANTON, THOMAS ELWOOD, JR. Prin. Asst. Div. Engr., California Highway Comm., 207 California Fruit Bldg., Sacramento, Cal.....			Jan. 13, 1919
STEVENSON, ALBERT LESTER. Progress Engr., U. S. Shipping Board, Emergency Fleet Corporation, 4910 Arch St., Philadelphia, Pa.....			April 14, 1919
STOCKER, HOWARD RAYMOND. Asst. Engr., Pennsylvania State Dept. of Health, Harrisburg; Address, Box 177, Camp Hill, Pa.....			Nov. 26, 1918

ASSOCIATE MEMBERS (*Continued*)

		Date of Membership.
TALBOT, KENNETH HAMMET. Western Mgr., Koehring Machine Co., 31st and Con- cordia Ave., Milwaukee, Wis.....	Jun. Assoc. M.	Oct. 7, 1914 Mar. 11, 1919
TEBBETS, JAMES HARGRAVES. Mech. Engr., Plant Eng. Dept., Bethlehem Shipbuilding Corporation, Ltd., P. O. Box 346, South Bethlehem, Pa.....		April 14, 1919
TINGLEY, FRANCIS. Engr. of Way, Altoona & Logan Val. Elec. Ry., Altoona, Pa.....	Jun. Assoc. M.	Jan. 3, 1911 April 14, 1919
VEATCH, FRANCIS MONTGOMERY. Acting Engr., Kansas State Board of Health, Law- rence, Kans.....	Jun. Assoc. M.	Jan. 6, 1915 April 14, 1919
WAX, WILLIAM FLOYD. 1st Lieut., Engrs., U. S. A., Care, D. of C and F, A. P. O. 717, Am. Exp. Forces, France; Address. R. F. D. No. 2, Box 196, Seattle, Wash.	Jun. Assoc. M.	Sept. 3, 1913 Mar. 11, 1919
WEIR, CARL LESLIE. 2309 Crotona Ave., New York City...		April 14, 1919
WHITNEY, FREDERICK CLIFFORD. Designing Engr., Ford, Bacon & Davis, 1540 Felicity Ave., New Orleans, La.		April 14, 1919
WHITNEY, JAMES THEODORE. Director, Whidden-Beekman Co., 100 Boylston St., Boston, Mass.....		April 14, 1919
WIERSEMA, HARRY ANTHONY. Care, Morgan Eng. Co., Goodwyn Inst., Memphis, Tenn.....		April 14, 1919
WOODWORTH, PAUL HENRY. Superv. Plant Engr., Div. of Shipyard Plants, Emergency Fleet Corporation, Care, The Colonial, Lancaster Ave. and City Line, Phila- delphia, Pa.....		April 14, 1919
WOOLLEY, WILLIAM EDWARD. Asst. Engr.'s Dept., Waltham- stow Urban Dist. Council, 118 Queen's Rd., Waltham- stow, London, E. 17, England.....		Mar. 11, 1919
WRIGHT, HERBERT JAMES. Plant Engr., The Barrett Co., Chemical Dept., Frankford (Res., 1219 Cheltenham Ave., Oak Lane), Philadelphia, Pa.....		May 15, 1917

## JUNIORS

BAER, BERNARD EDWARD. Capt., Engrs., U. S. A., U. S. Disciplinary Barracks, Fort Leavenworth, Kans....		Mar. 11, 1919
GRASSMAN, HERBERT STUYVESANT. Care, Y. M. C. A., Bed- ford Ave. and Monroe St., Brooklyn, N. Y.....		Oct. 8, 1918
PUGH, ISAAC WILLIAM. Efficiency Engr., United Rys. & Elec. Co. of Baltimore, 1509 Continental Trust Bldg., Baltimore, Md.....		Mar. 11, 1919
ROGOW, SYDNEY. 14 Morningside Ave., New York City...		April 14, 1919

## REINSTATEMENTS

MEMBERS	Date of Reinstatement.
ROSS, FLORIAN GAIE.....	April 15, 1919



ASSOCIATE MEMBERS		Date of Reinstatement.
WERBIN, ISRAEL VERNON.....		April 15, 1919

RESIGNATIONS MEMBERS		Date of Resignation.
HERRING, WILLARD E.....		April 15, 1919
ROOT, CHARLES WILBER.....		April 15, 1919

ASSOCIATE MEMBERS		
LUZZATTO, JOSEPH GIOVANNI.....		April 15, 1919
MERRIMAN, FRED KNIGHTS.....		April 15, 1919
O'DONNELL, JOHN ALOYSIUS.....		April 15, 1919
RENNELL, HENRY HURD.....		April 15, 1919
ROSENBERG, FRIEDRICH.....		April 15, 1919
TURNER, HOMER ROOT.....		April 15, 1919

ASSOCIATES		
ATWELL, HARRY HURD.....		April 15, 1919

JUNIORS		
ALLAIRE, DOUGLAS ANTHONY.....		April 15, 1919
BUZZELL, RALPH WALDO.....		April 15, 1919
MOYLAN, LEONARD KYRAN.....		April 15, 1919

DEATHS	
BEAN, PAUL JONES. Elected Junior, May 2d, 1911; Associate Member, December 31st, 1913; died January 25th, 1919.	
BRAINARD, OWEN. Elected Member, October 3d, 1906; died April 2d, 1919.	
BRIGHT, CHARLES EDWIN. Elected Associate Member, December 3d, 1902; died April 3d, 1919.	
JEME, TIEN YOW. Elected Member, November 30th, 1909; died April 24th, 1919.	
KELLOGG, NORMAN BENJAMIN. Elected Junior, February 6th, 1878; Member, July 3d, 1895; died November, 1918.	
KIRSTEIN, PAUL ROBERT. Elected Associate Member, May 15th, 1917; died October 17th, 1918.	
MACKAY, ANGUS ROBERT. Elected Associate Member, October 29th, 1912; died June 30th, 1918.	
MATSON, THOMAS HATCHER. Elected Associate Member, October 1st, 1913; date of death unknown.	
NICHOLS, LEWIS ABEL. Elected Member, October 5th, 1892; died March 5th, 1919.	
OBERMEYER, WALTER SCOTT. Elected Junior, April 7th, 1915; Associate Member, April 17th, 1917; date of death unknown.	
WHITTET, RUFUS MASON. Elected Associate Member, May 2d, 1911; Member, November 4th, 1914; died December 10th, 1918.	

Total Membership of the Society, May 8th, 1919,

9 039.

## MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(March 22d to May 1st, 1919)

NOTE.—This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

### LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

- |  |   |
|--|---|
| (2) <i>Journal, Engrs. Club of Phila., Philadelphia, Pa., 50c.</i>                         | (45) <i>Coal Age, New York City, 10c.</i>   |
| (3) <i>Journal, Franklin Inst., Philadelphia, Pa., 50c.</i>                                | (46) <i>Scientific American, New York City, 15c.</i>                                      |
| (4) <i>Journal, Western Soc. of Engrs., Chicago, Ill., 50c.</i>                            | (47) <i>Mechanical Engineer, Manchester, England, 3d.</i>                                 |
| (5) <i>Journal, Eng. Inst. of Canada, Montreal, Que., Canada.</i>                          | (54) <i>Transactions, Am. Soc. C. E., New York City, \$12.</i>                            |
| (6) <i>Journal, Am. Inst. of Archts., Washington, D. C., 50c.</i>                          | (55) <i>Mechanical Engineering: Journal, Am. Soc. M. E., New York City, \$10.</i>         |
| (8) <i>Stevens Indicator, Hoboken, N. J., 50c.</i>   | (56) <i>Transactions, Am. Inst. Min. and Metallurgical Engrs., New York City, \$6.</i>    |
| (9) <i>Industrial Management, New York City, 25c.</i>                                      | (57) <i>Colliery Guardian, London, England, 5d.</i>                                       |
| (11) <i>Engineering (London), W. H. Wiley, 432 Fourth Ave., New York City, 25c.</i>        | (58) <i>Proceedings, Engrs.' Soc. of W. Pa., 2511 Oliver Bldg., Pittsburgh, Pa., 50c.</i> |
| (12) <i>The Engineer (London), International News Co., New York City, 35c.</i>             | (59) <i>Proceedings, American Water-Works Assoc., Troy, N. Y.</i>                         |
| (13) <i>Engineering News-Record, New York City, 15c.</i>                                   | (60) <i>Municipal and County Engineering, Indianapolis, Ind., 25c.</i>                    |
| (15) <i>Railway Age, New York City, 15c.</i>   | (61) <i>Proceedings, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.</i>      |
| (16) <i>Engineering and Mining Journal, New York City, 15c.</i>                            | (62) <i>American Drop Forger, Thaw Bldg., Pittsburgh, Pa., 10c.</i>                       |
| (17) <i>Electric Railway Journal, New York City, 10c.</i>                                  | (63) <i>Minutes of Proceedings, Inst. C. E., London, England.</i>                         |
| (18) <i>Railway Review, Chicago, Ill., 15c.</i>  | (64) <i>Power, New York City, 10c.</i>  |
| (19) <i>Scientific American Supplement, New York City, 10c.</i>                            | (65) <i>Official Proceedings, New York Railroad Club, Brooklyn, N. Y., 15c.</i>           |
| (20) <i>Iron Age, New York City, 20c.</i>  | (66) <i>Gas Journal, London, England, 6d.</i>   |
| (21) <i>Railway Engineer, London, England, 1s. 2d.</i>                                     | (67) <i>Cement and Engineering News, Chicago, Ill., 25c.</i>                              |
| (22) <i>Iron and Coal Trades Review, London, England, 6d.</i>                              | (71) <i>Journal, Iron and Steel Inst., London, England.</i>                               |
| (24) <i>American Gas Engineering Journal, New York City, 10c.</i>                          | (71a) <i>Carnegie Scholarship Memoirs, Iron and Steel Inst., London, England.</i>         |
| (25) <i>Railway Mechanical Engineer, New York City, 20c.</i>                               | (72) <i>American Machinist, New York City, 15c.</i>                                       |
| (26) <i>Electrical Review, London, England, 4d.</i>  | (73) <i>Electrician, London, England, 18c.</i>  |
| (27) <i>Electrical World, New York City, 10c.</i>  | (74) <i>Transactions, Inst. of Min. and Metal., London, England.</i>                      |
| (28) <i>Journal, New England Water-Works Assoc., Boston, Mass., \$1.</i>                   | (75) <i>Proceedings, Inst. of Mech. Engrs., London, England.</i>                          |
| (29) <i>Journal, Royal Soc. of Arts, London, England, 6d.</i>                              | (77) <i>Journal, Inst. of Elec. Engrs., London, England, 5s.</i>                          |
| (32) <i>Mémoires et Compte Rendu des Travaux, Soc. Ing. Civ. de France, Paris, France.</i> | (83) <i>Gas Age, New York City, 15c.</i>  |
| (33) <i>Le Génie Civil, Paris, France, 1 fr.</i>   | (85) <i>Proceedings, Am. Ry. Eng. Assoc., Chicago, Ill.</i>                               |
| (36) <i>Cornell Civil Engineer, Ithaca, N. Y.</i>  | (86) <i>Engineering and Contracting, Chicago, Ill., 10c.</i>                              |
| (42) <i>Proceedings, Am. Inst. Elec. Engrs., New York City, \$1.</i>                       | (87) <i>Railway Maintenance Engineer, Chicago, Ill., 10c.</i>                             |
| (43) <i>Annales des Ponts et Chaussées, Paris, France.</i>                                 |   |

- (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.  
 (90) *Transactions*, Inst. of Naval Archts., London, England.  
 (91) *Transactions*, Soc. of Naval Archts. and Marine Engrs., New York City.  
 (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.  
 (93) *Revue de Métallurgie*, Paris, France, 4 fr. 50.  
 (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.  
 (98) *Journal*, Engrs. Soc. of Pa., Harrisburg, Pa., 30c.  
 (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.  
 (100) *Professional Memoirs*, Corps of Engrs., U. S. A., Washington, D. C., 50c.  
 (101) *Metal Worker*, New York City, 10c.  
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.  
 (104) *The Surveyor and Municipal and County Engineer*, London, England, 6d.  
 (105) *Chemical and Metallurgical Engineering*, New York City, 25c.  
 (106) *Transactions*, Inst. of Min. Engrs., London, England, 6s.  
 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.  
 (109) *Journal*, Boston Soc. C. E., Boston, Mass., 50c.  
 (110) *Journal*, Am. Concrete Inst., Philadelphia, Pa., 50c.  
 (111) *Journal of Electricity*, San Francisco, Cal., 25c.  
 (113) *Proceedings*, Am. Wood Preservers' Assoc., Baltimore, Md.  
 (114) *Journal*, Institution of Municipal and County Engineers, London, England, 1s. 6d.  
 (115) *Journal*, Engrs.' Club of St. Louis, St. Louis, Mo., 35c.  
 (116) *Blast Furnace and Steel Plant*, Pittsburgh, Pa., 15c.  
 (117) *Engineering World*, Chicago, Ill.  
 (118) *Times Engineering Supplement*, London, England, 2d.  
 (119) *Landscape Architecture*, Harrisburg, Pa., 50c.  
 (120) *Automotive Industries*, New York City, 15c.

## LIST OF ARTICLES

**Bridges.**

- Stress Measurements on the Hell Gate Arch Bridge.\* D. B. Steinman. (54) Vol. 82, 1918.  
 Obstruction of Bridge Piers to the Flow of Water.\* Floyd A. Nagler. (54) Vol. 82, 1918.  
 The Hell Gate Arch Bridge and Approaches of the New York Connecting Railroad Over the East River in New York City.\* O. H. Ammann. (54) Vol. 82, 1918.  
 General Specifications for Steel Railway Bridges. (5) Dec., 1918.  
 Maintenance and Painting of Highway Bridges. Charles D. Snead. (Paper read before Road School, Univ. of Kentucky.) (86) Mar. 26; (96) Apr. 3.  
 Looking for Unsafe Conditions in Timber Bridges.\* A. F. Robinson. (87) Apr.  
 Mechanical Features of Vertical-Lift Bridge.\* J. A. L. Waddell. (55) Apr.  
 Reinforced-Concrete Lift-Span Towers for Highway Bridge.\* F. H. Frankland. (13) Apr. 3.  
 Relieving Arches in Subway Distributes Stress to Piers.\* (13) Apr. 3.  
 Canada's Longest Reinforced Concrete Trusses.\* (96) Apr. 3.  
 The Michigan Avenue Improvement is the Most Important Addition to Chicago's Boulevard System.\* Hugh E. Young. (117) Apr. 15.  
 Concrete Pile Trestle construction.\* Albert M. Wolf. (117) Apr. 15.  
 The New Concrete Arch Bridge at Watertown, N. Y. (117) Apr. 15.  
 Dismantle Bridge Spans Carefully for Use Elsewhere.\* (13) Apr. 17.  
 Timber Arch Bridge One Hundred Feet in Length.\* D. R. Walkinshaw. (13) Apr. 17.  
 Highway Bridge Piles Concreted to Avoid Replacing.\* F. E. Semon. (13) Apr. 17.  
 Standard Bridge Abutments on Canal Projects.\* D. C. Willett. (13) Apr. 17.

**Electrical.**

- Carbon Brushes: Considered in Relation to the Design and Operation of Electrical Machinery.\* P. Hunter-Brown. (77) Feb.  
 Reliable Performance of Large Turbines.\* (116) Mar.  
 Commissioning Alternators. C. W. Marshall. (26) Mar. 21.  
 Continuous-Wave Land Radio Sets.\* Paul T. Weeks and Donald G. Little. (27) Mar. 29.  
 Compensated-Type Potential Regulators.\* Arthur H. Ford and others. (27) Mar. 29.  
 Electrical Equipment of a Modern Shipyard.\* A. Henderson. (73) Apr. 11.  
 Starting and Controlling Switchgear for Shipyard Machinery.\* A. P. Pyne. (73) Apr. 11.  
 Electric Light and Power Circuits on Board Ship.\* O. H. Kennedy. (73) Apr. 11.  
 Features of Muscle Shoals Station.\* Edward R. Welles and W. A. Shoudy. (27) Apr. 12.  
 Automatic Induction Generator Plants.\* E. A. Quinn. (111) Apr. 15.

\* Illustrated.

**Electrical—(Continued).**

- Pacific Coast Practice in Insulator Testing. (Report of Insulation Committee of N. E. L. A.) (111) Apr. 15.  
 Converting a Steam Plant to Stand-by Operation.\* L. M. Klauber. (Paper read before N. E. L. A.) (111) Apr. 15.  
 Radio Telephony.\* E. B. Craft and E. H. Colpitts. (19) Serial beginning Apr. 18.  
 Chart to Facilitate the Design of Lighting System.\* (27) Apr. 19.  
 Bureau of Standards Studies Return Circuit Conditions in Milwaukee.\* E. R. Shepard. (17) Apr. 19.  
 Modern Bus and Switch Structures.\* C. D. Gray and M. M. Samuels. (27) Apr. 19.  
 Electrical Service at Great Seaboard Terminal.\* (27) Apr. 19.  
 Electric Drive of the U. S. S. *New Mexico*.\* (27) Apr. 19.  
 Weighing High Temperatures in an Electric Balance.\* J. M. Bird. (46) Apr. 26.  
 Flexible Distribution for Industrial Plants.\* L. F. Leurey. (27) Apr. 26.  
 Interconnection Reduces Steam Reserve Necessary.\* L. J. Moore. (27) Apr. 26.  
 Operation at Holtwood.\* Charles H. Bromley. (64) Apr. 29.

**Marine.**

- Reinforced Concrete Dock Gates.\* (12) Mar. 21.  
 Submersible Salvage Pumps and Engines.\* (12) Mar. 21.  
 Concrete Consistency Measured by New Device.\* (Ships). Herbert A. Davis. (13) Mar. 27.  
 H. M. Seaplane-Carrying Ship *Argus*. (11) Serial beginning Mar. 28.  
 Luffing Cranes.\* (117) Apr. 1.  
 Hudson River Shipyard Layout to Build Concrete Car Floats.\* H. W. Eldridge. (13) Apr. 10.  
 Starting and Controlling Switchgear for Shipyard Machinery.\* A. P. Pyne. (73) Apr. 11.  
 Electric Welding Applied to Shipbuilding.\* J. H. Collie. (73) Apr. 11.  
 Electric Propulsion of Ships.\* J. F. Nielson. (73) Apr. 11.  
 Electric Light and Power Circuits on Board Ship.\* O. H. Kennedy. (73) Apr. 11.  
 The Searchlight Projector as Used in the Mercantile Marine.\* R. C. Harris. (73) Apr. 11.  
 Electric Bonding on Board Ship. N. W. Prangnell. (73) Apr. 11.  
 Generating Machinery for Merchant Ships.\* F. P. Fenton. (73) Apr. 11.  
 Electrical Equipment of a Modern Shipyard.\* A. Henderson. (73) Apr. 11.  
 Modern Shipyard Cranes.\* Claude M. Toplis. (73) Apr. 11.  
 Concreting Plant for Boston Dry Dock.\* (86) Apr. 16.  
 Electric Drive of the U. S. S. *New Mexico*.\* (27) Apr. 19.  
 History and Properties of Light-Weight Aggregates (for Concrete Ships). (13) Apr. 24.  
 Great English Invention for Sweeping Up Moored Mines.\* Halbert P. Gillette. (86) Apr. 30.

**Mechanical.**

- Plant of the Seaboard By-Product Coke Company.\* D. MacArthur. (83) Serial beginning Jan. 1.  
 Washing Light Oil Fractions from Coke Oven Gas.\* F. D. Schreiber. (83) Jan. 1.  
 Chester Producer Fired By-Product Coke Ovens.\* J. D. Shattuck. (83) Jan. 1.  
 Republic By Product Coke Plant at Youngstown.\* (83) Jan. 1.  
 Insulation for By-Product Coke Ovens.\* P. A. Boech. (83) Jan. 1.  
 Wood as a Fuel: Use for Industrial Purposes. (118) Mar.  
 Principles of Gas Purification and Purifier Design.\* F. W. Steere. (83) Serial beginning Mar. 1.  
 Control of Water Gas Sets in Small Plants.\* H. Von Vittinghoff. (From paper read before New England Assoc. of Gas Engrs.) (83) Serial beginning Mar. 1.  
 Vertical Retort Steaming Tests at Springfield.\* L. J. Willien. (83) Mar. 1.  
 Dehydration of Various Tars: Gas Works Tar.\* W. A. Twine. (Paper read before Midland Junior Gas Assoc.) (66) Mar. 4.  
 Structural Work in the Gas Works. (66) Mar. 11.  
 High Pressure Distribution Formulae. W. Marsh Hampton. (66) Mar. 11.  
 On Some Principles of Manufacturing Interchangeable Articles to Limit Gauges.\* G. Gerald Stoney. (11) Mar. 21.  
 United States Nitrate Plant, No. 2, at Muscle Shoals, Ala.: The Boiler Room.\* Charles H. Bromley. (64) Serial beginning Mar. 25.  
 Refrigerating Plant Data.\* (64) Mar. 25.  
 The Lubrication of Motor Cars.\* G. W. A. Brown. (Paper read before Inst. of Automobile Engrs. of Great Britain.) (120) Serial beginning Mar. 27.  
 Handling River Coal at Harrisburg. Henry J. Edsall. (45) Mar. 27.  
 Diesel Engines and the Merchant Marine. Bruce Lloyd and George A. Dow. (55) Apr.

\* Illustrated.





**Mechanical—(Continued).**

- The Large Steam Turbine.\* J. F. Johnson. (55) Apr.  
 Refrigerating Plant Efficiency.\* Victor J. Azbe. (55) Apr.  
 Heavy Field Piece with Mobile Mount.\* C. L. McCrea. (55) Apr.  
 Lubrication of Air Compressors.\* H. V. Conrad. (From a Report issued by Compressed Air Soc.) (55) Apr.; (45) Apr. 17.  
 The Design of Artillery Ammunition and Some Recent Developments at Frankford Arsenal.\* J. Wallace Taylor. (2) Apr.  
 By-Product Plant of the Brier Hill Steel Company.\* F. T. Moran. (83) Apr. 1.  
 The Operation of a Gearless Traction Elevator.\* R. H. Whitehead. (64) Apr. 1.  
 The Largest Gas Utility Company in the World.\* (83) Apr. 1.  
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 Freezing Method for Testing Benzol in Paris Gas.\* Emile St. Claire Deville. (From *Journal des Usines a Gaz*.) (83) Apr. 15.  
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 The Engine of the Side Car Motorcycle.\* E. Caudwell. (Paper read before Inst. of Automobile Engrs.) (120) Serial beginning Apr. 17.  
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- Leaching of Copper Ores at Bisbee, Arizona.\* Joseph Irving. (74) Vol. 86, 1917.  
 The Wet Assay of Tin Concentrate.\* H. W. Hutchin. (74) Vol. 26, 1917.  
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- The Design of Heating Furnaces from a Practical Standpoint.\* George J. Hagan. (58) Feb.
- Cast-Steel Anchor Chain.\* A. E. Crockett. (58) Feb.
- Manganese Alloys in Open Hearth Practice. Samuel L. Hoyt. (116) Mar.
- Novel Plate Turnover for Tandem Mill.\* (116) Mar.
- Investigation of Gases Occluded in Steel.\* Thomas Baker. (Abstract of paper read before Faraday Soc.) (116) Mar.
- Present American Acid Bessemer Process. Richard S. McCaffery. (From *Wisconsin Engineer*.) (116) Mar.
- The Corrosion of Non-Ferrous Metals. Guy D. Bengough and O. F. Hudson. (Abstract of Report to Corrosion Comm. of Inst. of Metals.) (11) Serial beginning Mar. 21.
- Electric Welding: Its Theory, Practice, Application and Economics. H. S. Marquand. (73) Serial beginning Mar. 21.
- Reclaiming High-Speed Steel Scrap.\* Edwin F. Cone. (20) Mar. 27.
- Difficult Steel Casting. Robert Hadfield. (Abstract of paper read before Faraday Soc.) (20) Mar. 27.
- Specifications for High Speed Steels. R. Poliakoff. (20) Mar. 27.
- World's Largest Electric Steel Plant in Toronto.\* George T. Clark and Frederick Phillips. (96) Mar. 27.
- The Properties of Some Copper Alloys. W. Rosenhain. (Paper read before Inst. of Metals.) (11) Mar. 28.
- Metallurgy of the Oklahoma-Kansas District. Robert W. Johnson and C. E. Heinz. (Abstracted from the *Joplin Globe*.) (16) Mar. 29.
- Problem of Treating Impure Manganese Ores. Edmund Newton. (16) Mar. 29.
- New Blast Furnace Gas Cleaning Outfit.\* (116) Apr.
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- The Control of Methods and Processes.\* H. L. Campbell. (Paper read before Steel Treating Research Soc.) (62) Apr.
- Effects of Heat When Annealing Alloys.\* H. C. H. Carpenter and L. Traverner. (62) Apr.
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- Practical Considerations in Ammonia Leaching of Copper-Bearing Ores.\* Lawrence Eddy. (105) Apr. 1.
- Cleaning Furnace Gases without the Use of Water.\* J. C. Barrett. (105) Apr. 1.
- Composition and Characteristics of Lining Alloys. Alfred A. Greene. (Abstract of paper read before Purchasing Agents' Assoc. of St. Louis.) (20) Apr. 3; (17) Apr. 5.
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- Unloading, Crushing and Screening at the Arthur Mill of the Utah Copper Company.\* F. G. Janney. (103) Apr. 5.
- Gray Iron Castings from Electric Furnace. George K. Elliott. (Abstract of paper read before Am. Electrochemical Soc.) (20) Apr. 10.
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- Estimating Screen Efficiency.\* W. O. Borchardt. (16) Apr. 12.
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- The Determination of Manganese: a Modification of Volhard's Method. W. C. Riddell. (U. S. Bureau of Mines.) (103) Apr. 19.
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- Weighing High Temperatures in an Electric Balance.\* J. M. Bird. (46) Apr. 26.

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- U. S. Chemical Warfare Service.\* (46) Serial beginning Mar. 20.
- United States Nitrate Plant, No. 2, at Muscle Shoals, Ala.: the Boiler Room. Charles H. Bromley. (64) Serial beginning Mar. 25.
- Cost of Camp Utility Operation by the Construction Division of Our Army.\* George W. Fuller. (13) Mar. 27.

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 Mine Ventilation in the Coeur d'Alenes. Robert N. Bell. (Abstract of Report of the Mining Industry of Idaho.) (16) Apr. 5.  
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Steel Passenger Cars for Indian State Railways.\* F. C. Coleman. (18) Feb. 15.  
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- Machine Finishing Concrete Roads.\* E. G. Carr. (60) Apr.
- Military Roads as Constructed and Projected by the Construction Division, War Department, U. S. A. in 1918.\* Daniel B. Goodsell. (60) Apr.
- Considerations Affecting Design of Heavy Traffic Highways in Ontario. W. A. McLean. (60) Apr.
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- Earth Moving Methods and Equipment for Road Construction. A. R. McVicar. (86) Apr. 2.
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- Provincial Highway Surveys. John T. Ransom. (96) Serial beginning Apr. 10.  
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- A Phenomenal Land Slide—Supplement.\* D. D. Clarke. (54) Vol. 82, 1918.  
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\* Illustrated.